The Iron Age

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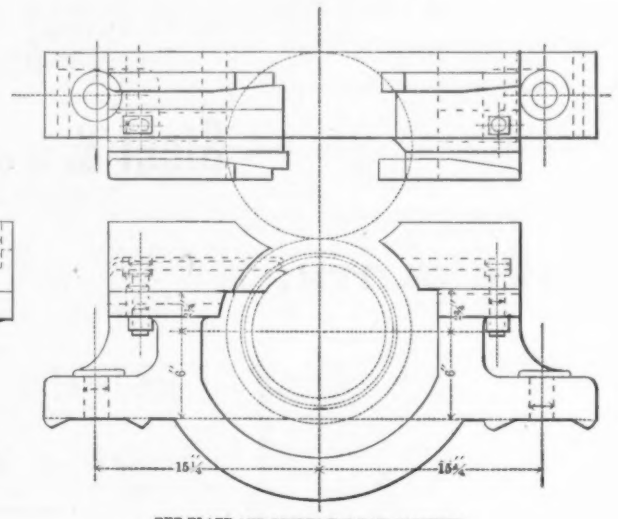
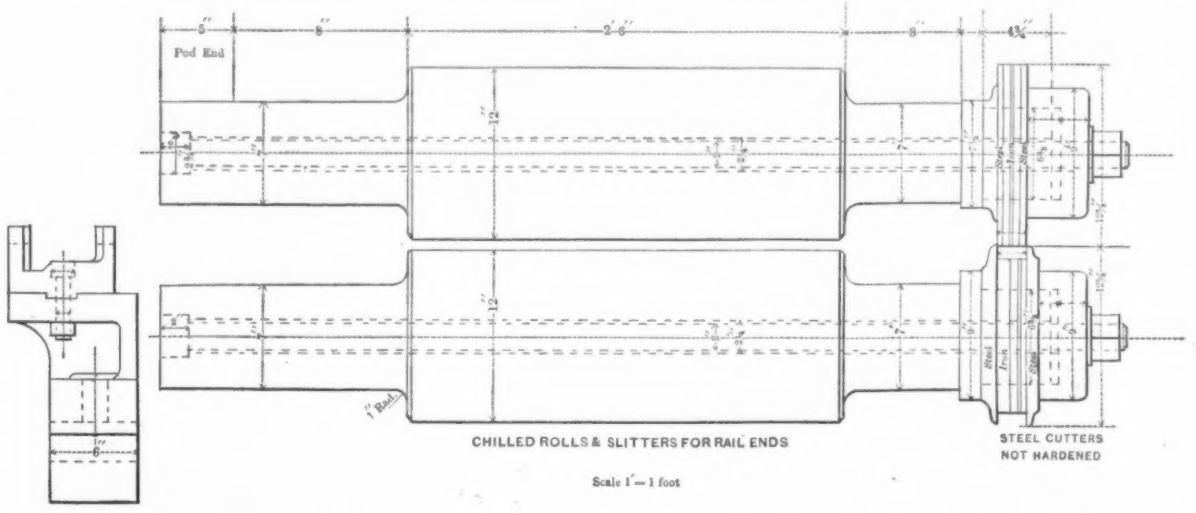
Apparatus for Slitting Bessemer Rail Ends.

We illustrate herewith a pair of slitting rolls, or rail slitters, designed by Mr. A. L. Holley, and intended for cutting off the heads and flanges of rail ends. When cut up in this way the pieces are available for rolling into bar in the ordinary method. The steel cutter heads are held in place by a nut and bolt, while iron distance pieces keep the cutters in place. The cutters are by this means adjustable. The drawing shows the construction very plainly, and gives the dimensions as well. At the left,



BED PLATE AND GUIDES FOR RAIL SLITTERS.



SLITTER FOR BESSEMER RAIL ENDS.

plan, elevation and end views of the bed plate and guides are shown on the same scale. Taken altogether, the arrangement is exceedingly neat, simple and effective, points which seem to be characteristic of Mr. Holley's devices in general. We understand that the apparatus is working in a very satisfactory manner preparing rail ends for the rolls. The economy of slitting old rails and crop ends before attempting to reroll them will be understood by the reader without further explanation. The three pieces into which the length of rail is divided are available for immediate conversion into merchant steel at one operation, without the necessity of welding any part of the metal upon itself.

The "Champion" Mine Ventilator.

The great importance of a proper and efficient apparatus for the ventilation of mines is a subject which has long engrossed the attention of engineers and mine operators, and has furnished subject matter for lengthy discussions by the American Institute of Mining Engineers, as well as similar organizations in Europe. In the construction of such a ventilator two fundamental principles are absolutely essential, viz.: 1. A maximum displacement of air per horse-power, either in exhausting or forcing. 2. Facility for changing at will from one to the other of these functions, as may be required by the circumstances of the case. The "Champion" ventilator, Fig. 1, was designed expressly to supply this want; and to judge from a careful examination of its construction, and as much as can be seen of its action at the Exposition, it would seem to be well adapted to the purpose. It has been accorded the unqualified approval of numerous well known mining experts and engineers, who have subjected it to practical tests, as regards efficiency, although none have yet been made to determine accurately the duty performed per lb. of fuel, the only data on the subject being such as it was possible to deduce from calculating by ordinary rules the power transmitted by the belts, contact surface, &c., &c., which, although practically assimilating pretty closely, the correct figures are hardly accurate enough in a scientific point of view. The results of these calculations, however, will give an approximate idea of the capabilities of the machine, and may be quoted as follows:

Diam. Fans.	Displacement per min. cubic feet.	Horse-power.
6 feet	80,000	8
7 "	110,000	11
8 "	140,000	14

This makes the duty per horse-power per min. 10,000 cubic ft., or a velocity (the opening to the suction being an area of 22·5 square ft.) of 40 miles per hour. As shown by the cuts, the machine is of ultra simplicity in construction as well as operation, and may be built at comparatively small cost. Referring to Fig. 2, which shows a vertical section through the axis of the fans, a brief explanation will render the construction of the machine easily understood. The cut represents the ventilator as arranged for forcing the air into the mine. A is the receiving chamber through which the air passes to the fans, both in forcing and exhausting; B B' the side chambers containing the fans, C C; D a vertical door or valve at front of central chamber; E E are passages which connect the side chambers with the shaft of the mine S; F F are doors or valves in the bottom of the central chamber, by means of which communication with the mine shaft may be opened or closed; P P are sliding counter-balance weights, for balancing the doors F F; H H' are the top doors to the side chambers, represented as closed; I is a light frame or rest, for supporting these doors when the action of the machine is reversed, which requires them to be opened, as shown by the dotted lines *h h'*; the inner arms of the fan wheels are shown at *a a'*. The action when arranged as above is as follows: The fans (running at their rated speed of 410 revolutions per minute and revolving always in the same direction) draw the air through the open doorway D, and the circular openings surrounding the fan-shaft, the direction being indicated by the arrows, the doors F F being closed to the induction and opened to the eduction. The doors H H also being closed, the discharged air has but one course open through the side passages E E into the shaft S, as shown by the downward arrows. The necessary changes in the arrangement of the doors for reversing the action and exhausting from the mine may be made without any change in the operation of the fans, or even stopping them, as follows: The door D is closed; H H' are opened, as shown by the dotted lines *h h'*; the bottom doors F F are dropped to a vertical position, thus opening the suction and closing the discharge as shown at *f f*. The course taken by the current would then be upward from the shaft through the central chamber into the fans, and being discharged at the periphery of the latter pass out at H H' and a side door in each of the end chambers, not shown in the cut. The fans Fig. 3, both keyed to the same shaft, are formed of an outer disc and an inner ring, connected by the wings or blades, the latter being so constructed as to move the greatest possible quantity of air with a minimum of friction. The radial arms of the wheels are arranged to materially assist in drawing the air through the central openings, being placed at an angle of 45° to the plane of rotation, thus utilizing a feature which would, if differently constructed, be a great disadvantage, by causing a large amount of friction. As the areas of the two outer discs are both exactly the same, the lateral pressure outward is acting equally on each, and is consequently balanced. The wheels are made entirely of iron in one casting, and are not liable to become disarranged by working loose of bolts or displacement of parts. The central openings in the fans correspond in size and position with the passages from the receiving chamber, and are made to work as closely as possible to the latter, to prevent leakage from the eduction side. The apparatus was awarded two separate prizes at the Centennial, it coming under the heads of classification of groups I (minerals, mining, metallurgy and machinery), and XX (motors, hydraulic and pneumatic apparatus). It is in operation in Hydraulic Annex to Machinery Hall. Any desired information in reference to the subject may be had by addressing the patentee, Francis Murphy, Esq., C. E., or Jas. S. Smith, Esq., C. E., No. 410 Walnut street, Philadelphia, Pa.

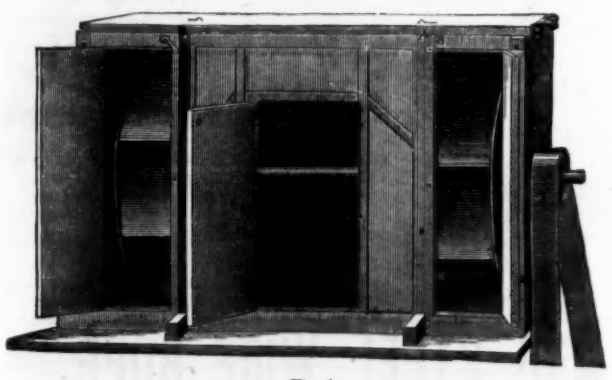


Fig. 1.

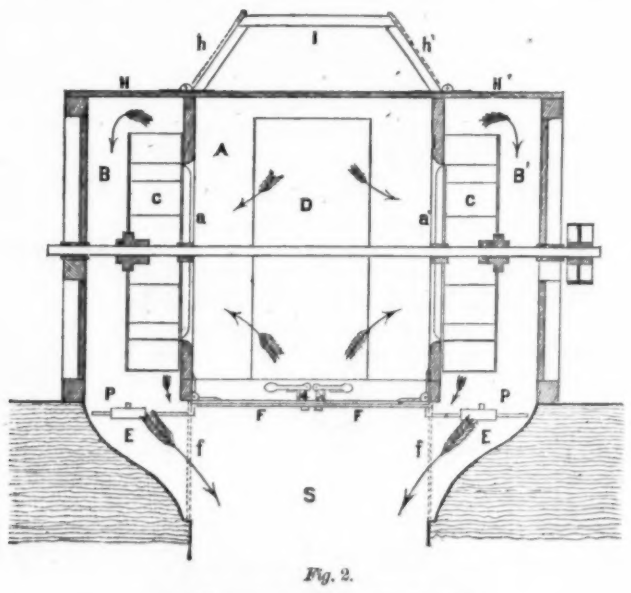


Fig. 2.

THE "CHAMPION" MINE VENTILATOR.

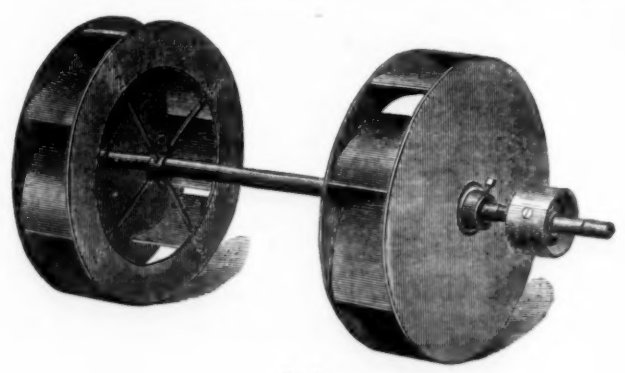


Fig. 3.

European Armaments.

At the present time a war in Europe seems almost inevitable, and at any moment a formal declaration may be expected. The results of a war would have an important influence upon this country, and would not fail to stimulate both manufacturing and commercial industry. In view of this our readers will find an account of the European armaments of no little interest.

The "Gras" gun, adopted by the French army since 1874, weighs 4 kilos 200 grammes, and with the sword bayonet 4760; it is an improvement on its predecessor, the "Chassepot," which served during the late war, and had many defects. The manufacture of these guns is proceeding rapidly, and the active army will soon be furnished with them. Certain technical corps will, however, be armed with Spencer guns and carbines and Winchester guns, the latter firing 15 shots a distance of 225 meters in seconds.

Germany, in 1872, adopted the "Mauser," which resembles the "Gras" in many respects, but is heavier, weighing 5 kilos 100 grammes with sword bayonet fixed. The "Chassepot" taken from the French have been tranformed into carbines of one meter for cavalry use.

Bavaria, since 1869, has adopted the "Werder," now being so modified as to take the "Mauser" cartridge.

England in 1871 chose the "Martini-Henry" gun, and Russia the "Berdan;" the latter closely resembling the Chassepot, and being rapidly turned out by its three armories at Toula, Sestrovertz and Ijewski. Aside from this, Russia has 1,000,000 "Karl & Krink" rifles firing 6 shots per minute.

Austria, since 1867, uses the "Werndl" and a repeating rifle of the "Fruhwirth" system. The latter fires 8 shots consecutively without reloading; it takes 12 seconds to load it.

The Belgian infantry service has in use the "Albine Braendein," similar to the Austrian Wuenzl, the predecessor of Werndl.

Holland has a new armament of "Beaumont" rifles since 1871.

Switzerland possessed "Peabody," model of 1867, and Vetterli repeating rifles and carbines. The latter takes 25 to 30 seconds for firing 13 shots; in loading and reloading 15 shots may be fired per minute.

Italy is furnished with three different species of rifles and carbines, the "Carcano," "Vetterli" of 1870, and "Remington," the latter appropriated during the annexation of the Pontifical States.

Spain, in 1867, remodeled its guns after the "Berdan" system, but in 1871 adopted for its infantry Remington rifles. All the various species enumerated are breech loading rifles. In target firing at distances of between 100 and 1300 meters, the "Martini-Henri" has given proof of the greatest precision; next thereto the "Gras;" and third in rank the Spanish Remington. But in active warfare these qualities lose much of their importance. All the guns enumerated are considered about equal in point of quality. It is, therefore, merely a matter of handling during action, and in this respect the various nations generally evince great differences, according to drill, temperament, etc.

Chromium Glue.—A new substance in the arts, known as chromium glue, is a concentrated solution of gelatine, to which has been added for every five parts of gelatine one part of chromate of lime in solution. This mixture has the property, on exposure to light, of becoming insoluble in water, a result due to the partial reduction of the chromic acid to a lower degree of oxidation—a property which has already been utilized in photo-lithography. It is now proposed to employ this combination as a cement for glass vessels which have been broken. The surfaces of the vessels to be thus treated are cooked as uniformly as possible with the freshly prepared glue, and are then pressed firmly together and held in this position by means of thread. The vessel is then exposed to the light for several hours, at the expiration of which time the operation is complete. Boiling water does not cause the article treated in this way to separate, having, in fact, no effect upon the new combination. This chromium glue may also, it is found, be utilized in the manufacture of waterproof cloth and paper impenetrable to moisture. For this purpose the fabric is stretched upon a frame and immersed two or three times in the preparation and exposed to the sun. Damp proof paper, too, may be prepared by simply brushing over the surface with a thin solution of the substance above described.

Heracline is the name given to a new blasting powder, invented by Dikheroff, and which has been tried with success in the coal mines of Europe and Austria. It is composed of picric acid, saltpeter, nitrate of soda, sulphur and sawdust. The gases produced by its combustion are not injurious, it is claimed, and it burns comparatively slowly, so that it only tears apart the masses blasted, but does not hurl them violently about.

The favorite American systems of bridge building have been adopted by the Brazilian government for use in all future internal improvements. The problems involved in the development of Brazil are so similar to those which have been solved here, that her rulers can doubtless imitate with profit and advantage many of our public works, purchase many of our supplies, and extend the process of buying cars and locomotives, to the construction of American bridges and the use of American coal.

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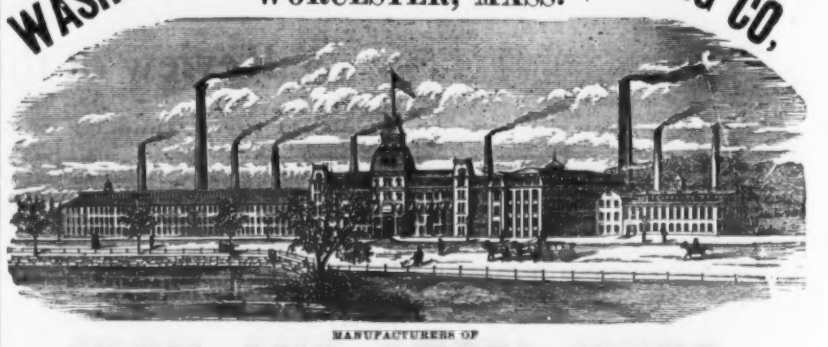

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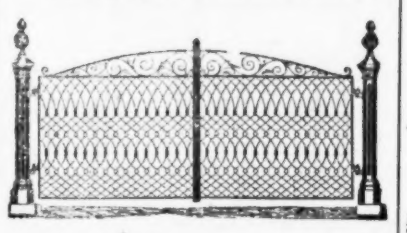

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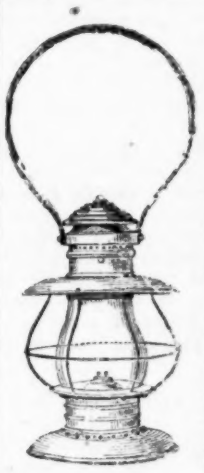

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Bessemer and Scotch Pig in the Virginias.

The letter of "Champlain," published in our issue of the 19th ult., has called out the following response from Mr. Taylor:

ALEXANDRIA, VA., Oct. 21, 1876.

To the Editor of The Iron Age—DEAR SIR: Your correspondent "Champlain," in your issue of Oct. 19th, it would seem, infers that capitalists would scarcely examine my moderate estimate of the cost of making Bessemer pig iron in Virginia, and Scotch pig in West Virginia with the pure ores and coals so recently proven to exist in inexhaustible quantities.

By *The Iron Age* of Jan. 7th, 1875, I find that in Pennsylvania and New York in 1851 the average cost of pig iron at furnace was $18·30, and in 22 years after, or 1873, it went up to $32·41 per ton. It need not seem strange to "Champlain," as it is not to capitalists generally, and especially foreign investors, that the primitive lands in Virginia and West Virginia, where iron ore and coal lands can now be purchased at from $1 up to $10 an acre, according to locality, must and does offer to capitalists what no old and developed country can, and this has been fully attested by sales made during the past few years in those States. I can further assure "Champlain" that I mean exactly what I say in affirming that Bessemer pig can be made at a cost not to exceed $12·51 per ton at furnace, from No. 16, No. 3, No. 6 and No. 5 ores from Virginia as analyzed by Prof. Genth, and given in your issue of Oct. 5th. Also, that the blackband pig iron made at the mouth of the Gauley River will not exceed $9·23 actual cost to the purchaser of the lands, allowing full interest on capital employed. In addition to the blackband pig and Bessemer pig, almost every other variety of pig iron for foundry, bar, mill and car wheel purposes can be made equally cheap from the enormous deposits of red and brown hematites and fossil ores that are crossed by the C. & O. R. R., in Allegheny county, Virginia, between the coals and magnetic and specular ores. Mr. I. L. Bell, F. R. S., of England, reports in your issue of August 10, 1875, that he examined a deposit of brown hematite in Virginia, that was about 24 feet wide with a fall of 40 feet in hight that yields 47 per cent. of metallic iron in the furnace. All the way down from Buffalo Gap to Covington ore of the description we are considering is to be met with, and in some places in larger quantities.

One of the largest coal owners and miners of the anthracite regions of Pennsylvania, Pardee, Firmstone & Co., have now a blast furnace called the Lucy Furnace, near Clifton Forge, on the C. & O. R. R. They use the above named ores, and the New River coke from Boyer's Ferry, Fayette county, West Virginia, 121 miles by the C. & O. R. R., west of the furnace. My estimate of smelting these red and brown hematites and fossil ores found near Clifton Forge and Covington with coke, from the New, Gauley, or Kanawha Rivers, a distance of say 125 miles by C. & O. R. R., with limestone at near Ronceverte, only 33 miles from furnace, showing 93·76 and 90·11 carbonate of lime, as used by the Quinnimont Furnace Company, Fayette county, would be as follows to the owners of the coal and ore lands:

2¼ tons ore	$1·50	$3·38
1¼ tons coke	1·50	2·75
Transportation 125 miles	1·25	·69
		8·44
1·6 ton limestone at $3		·50
Labor at present estimate for 30 to 50 tons per day, furnace		2·50
Interest on capital per ton		1·00
Cost at furnace		$10·82

Since my letter of Sept. 19 was written I find by an examination of the coals and iron ores on exhibition at the Centennial from every portion of the United States, as well as from almost every portion of the known world, that my statement published by you in your issue of Oct. 5, is more than sustained as to the low cost to make the best irons of every description, as compared with any place yet reported in the world, which arises from the fact of the great purity, proximity and immunity of the deposits of the ores, coals and limestones.

The deposit of hematite ores described by Mr. Bell is more than 20 miles long, and it is said it is greater in quantity than the celebrated Cleveland ore district of England, upon which 100 furnaces are kept running with ore, reported by Prof. Cox, of Indiana, who visited it in 1873, assaying only 32 per cent. metallic iron, while the Virginia ore gives 47 per cent. metallic iron in the furnace.

The Longdale Coal Company show in the West Virginia Building, exhibit No. 50, even less sulphur than I reported before, being as follows:

Coke from coal	93·00
Ash	6·73
Sulphur	·27
Total	100·00

Analyses of the 11 foot bituminous of the Gauley and Kanawha Company gave 10,000 feet of gas per ton, and candle power of the same 17·9. No. 302 specimen of bituminous coal from the Kanawha Semi-Cannel Company shows 18 candle power, while pure cannel coal shows from 25 to 32 candle power, as to locality. No. 303 specimen, from Davis and Brier Creek, show a blackband ore of 68·35 carbonate of iron, and it is claimed by its depositor that, thoroughly calcined or roasted, it will give 65 per cent. of iron.

Fayette county and Kanawha county, of West Virginia, show a most remarkable display of minerals, with timber of immense size, quality and quantity, which alone will soon be worth ten times more than what will yet buy many of the lands. All samples of timbers, coals and ores can yet be seen in the State building of West Virginia at the Centennial.

M. TAYLOR.

The Tunnel under the Hudson.

The work of excavating the tunnel which is to connect New York and Jersey City under the bed of the Hudson River progresses slowly, the company undertaking the work being still embarrassed by litigation, which they have not yet been able to force to a final settlement. It is probable, however, that the question of right of way will be decided in a few weeks in favor of the tunnel company. The company will then begin on the New York side, bore under the river and meet the workmen tunneling from the New Jersey side. The work on this side will begin at the foot of Morton street. The work is carried on under the direction of the Hudson Tunnel Company, incorporated under the general laws of the States of New York and New Jersey, and the capital, which is all subscribed, is $10,000,000. The entrance to the tunnel on the Jersey side will be from Jersey avenue, and from that point to the New York bulkhead line the extent of boring to be done will exceed somewhat 5400 feet. The terminus in this city—probably in Hudson street—has yet to be selected by commissioners. The entire length of the tunnel and its approaches will be 12,000 feet—with depot tracks to be added—being about one mile under the river and nearly three-fourths of a mile on each side.

The engineer of the road, W. H. Paine, says the company purpose to employ as many men as can be successfully engaged in excavating and laying brick, changing the men each stretch of eight hours. Thus, by constant work, it is believed the tunnel can be advanced five feet from each and every day, and the whole work completed in two years.

The work was commenced in November, 1874, after extensive experimental borings down to the depth to be occupied by the tunnel. While occupied bricking the shaft, the Delaware, Lackawanna and Western Railroad obtained an injunction stopping the work, and it was not until last month that the injunction was removed and the company enabled to get to work.

The depth of the shaft is a little over 70 feet, and the greatest depth of water under which the tunnel will pass is 60 feet. The extreme grade is 2 in 100 feet descending from Jersey City, and then, ascending on the New York side, 3 in 100 for 1500 feet, then 2 in 100 to the New York end. The borings already made show that the soil through which the tunnel will pass is, for the most part, of a tenacious silt, underlaid by sandstone. Near the New York shore rocks are encountered and gravel, which is considered favorable for tunnel construction, not offering any serious difficulties to the builder, as would bare sand and mud. The tunnel walls will be constructed of brick and cement 3 feet in thickness and circular in form. The hights of the tunnel will be 24 feet and the width 26 feet. A double track will run through it, resting upon a stone ballast 5 feet from the bottom. The walls will be painted white and lighted with gas. Heavy steel rails will be used, which the company have already prepared. Pneumatic tubes, gas and water mains can run through the tunnel beneath the track, if desired, so that New York gas and water may be sent to Jersey.

When the tunnel is completed passengers can be carried, without change of cars, from the South and West, as well as from Newark, Paterson and Elizabeth. Freight trains will have transit at night, and milk trains early in the morning. The company propose to use their own locomotives to convey the cars through the tunnel. These will be very powerful, and will be run without bells or whistles, by signals, and will consume their own steam and smoke. All connecting railroads are to have an equal right to have their passengers and freight transported on equitable terms.

The company contemplates a tunnel beneath the East River, which will make the link complete and do away with the ferry boats as conveyors of freight, and obviate all the difficulties of fog and ice which now trouble the companies with railroad depots in this city.

The decision of Judge Depue in the Court of Errors and Appeals, on the application of Attorney General Vanatta for a permanent injunction has been filed in the office of the Secretary of State. The syllabus of the opinion is as follows:

1st. Lands under water granted by the State to a corporation under the sub-section of the Riparian act are not lands belonging to the State within the meaning of the 36th section of the general Railroad act, although in such grant a rent payable to the State is observed, and power is given to re-enter the lands for the non-payment of rent.

2d. The right to re-enter and repossess the lands for non-payment of rent does not credit an estate in revision.

This decision ends the legal controversy with the Delaware, Lackawanna and Western Railroad, and permits the company to proceed with the work.

Comparative Cost of Illumination.

A number of experiments have been made lately in London to test the comparative cost of illumination with the various materials used for that purpose. Below is the result, the first column containing a description of the materials tested; the second, the price of the material in London, reckoning 24 cents to the shilling; the third column shows the duration of the light furnished for one cent, the light being reduced to equal one sperm candle. With the exception of the last named material, common gas, the prices do not vary sufficiently from those which prevail here to effect the value of the comparison. London gas is reputedly of inferior illuminating power, so that the economy of its use can scarcely be so much greater than ours as its cheapness would seem to indicate.

		h.	m.
Standard sperm candles, per lb	$0·48	1	7
Best wax candle, per lb	·48	1	6
Sperm oil in moderator, per gal	2·88	1	12
Belmont sperm candle, per lb	·30	1	27
Stella, or Burmese wax, per lb	·30	1	37
Petroline candle, per lb	·36	2	15
Composite candle, No. 1, per lb	·22	2	5
" " No. 3, "	·16	2	45
Common dip candles, per lb	·12	2	52
Almond oil, in moderator, per gal	2·22	3	..
Colza, per gal	1·20	4	37
Paraffin oil, in lamp, per gal	·72	9	35
Common gas, per 1000 ft	·90	26	..

The price of gas being about three times as great in most American cities as in London, no such marked advantage as appears in the table can accrue from its use on the score of cost. Still, it must rank among the most economical of artificial illuminations—at least three or four times as economical as common candles for a given amount of light.

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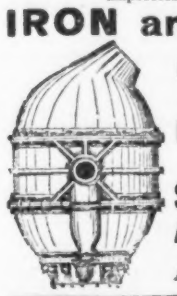

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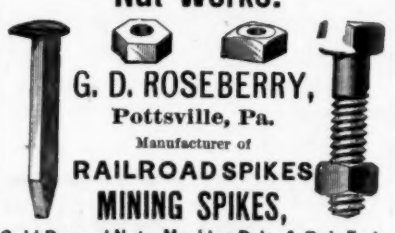

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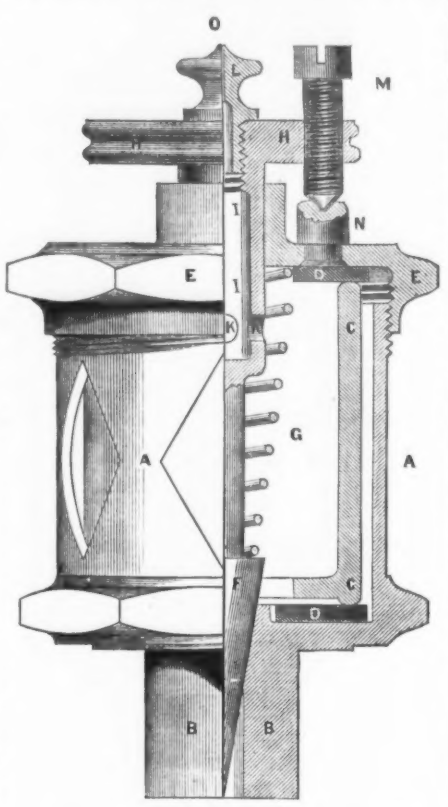
Centennial Notes.

LONERGAN & M'BRIDE'S PATENT LUBRICATOR.

The cut herewith presented represents (full size) the improved lubricator manufactured by the above firm, of Philadelphia, Pa. It is designed especially for use on locomotive guides, although equally applicable to all kinds of sliding bearings. As will be noticed, the view is one-half perspective and one-half sectional, the latter showing clearly the construction of the cup and internal parts. A A is an outer brass casing, having the diamond shaped openings, and being cast in one piece with the shank B B. Within this casing is the oil vessel or cylinder C C made of clear glass, for the purpose of showing the quantity of oil contained. The top and bottom joints are made on cork washers D D (by screwing down the cap E E, as shown), which, while preventing leakage, are entirely unaffected by the oil, and, at the same time, are sufficiently elastic to obviate any danger of breaking the glass from unequal expansion. The conical valve F is for regulating the supply of oil, and its stem is chambered in the upper part, as shown at I I, having four orifices K K. The milled wheel H H forms the top of the stem, the opening to the chamber I I being closed by the thumb-screw L. The spiral spring G bears upon the top of the valve and the cap E E, holding the valve down toward the seat. A conical pointed set-screw M passes through the milled wheel, and bears upon the seat or nipple N. The cap is filled by unscrewing the thumb-screw L, the oil poured into the chamber I and passing out at K. The feed is regulated by the set-screw M, which, when screwed down, raises the valve to the proper point to allow of the desired flow of oil, and when once adjusted the feed can be stopped at any time without its being altered. This is done by raising the wheel H and turning it in either direction until the set screw is clear of the seat, when the action of the spring G closes the valve and entirely prevents the flow of oil. This arrangement, and the nice adjustment of which the feed is capable, renders the cup very economical, no more oil being used than is absolutely necessary for properly lubricating the bearing. In addition to their practical qualities these cups are very ornamental, and as there is no leakage possible, they can always be kept clean and bright. A medal and diploma were awarded, and special mention made by the judges at the Exposition. The exhibit includes numerous styles of oilers for different purposes, and presents a very handsome appearance. It is located in Sec. D 9, Col. 66, Machinery Hall.



LONERGAN & M'BRIDE'S PATENT LUBRICATOR.

IMPROVED MACHINERY FOR THE MANUFACTURE OF GALVANIZED IRON CORNICES.

The manufacture of sheet metal cornices within the past few years has become an important industry, which involves a very heavy aggregate of invested capital, many of the manufactories being on a very large scale, and engaged exclusively in the production of cornices and other ornamental sheet metal work of a similar character which is now so largely used in buildings. The advantages possessed by metallic cornices over those constructed of wood or stone are too obvious to require comment, as in addition to the superior lightness and durability of the former they possess the very desirable quality of cheapness, not only in first cost, but also the ease with which any necessary repairs or alterations may be effected. The invention and use of machinery in different branches of manufacture have almost invariably been with a view to supersede the slow and expensive hand labor previously employed, and were the result of an acknowledged and long felt want. In the case of cornice machinery, however, we find a reversal of the order of cause and effect, from the fact that the machinery preceded, and gave rise to the demand for the article which it produced, creating an industry which without its use could not exist. A machine of this class, manufactured by Calvin Carr & Co., of Cleveland, Ohio, is exhibited in operation in Sec. B 3, Col. 28, Machinery Hall. It is arranged for operating either by hand or power, and is of the utmost simplicity of construction. It is composed of three horizontal rolls, having the necessary bearings and adjustments, and a small vertical guide roll, which may be adjusted in any desired position in relation to the large rolls. The latter are turned to suit the required curves and angles of the molding to be formed, two of them (the lower ones) being for the outside and the upper one for the inside profile. They are arranged as follows: A vertical housing carries the journal boxes of one pair of rolls, the lower one—having the outer form—being stationary, while the upper—which forms the inside—has a vertical adjustment. Outside the journal of the lower or stationary roll at the right hand is a large gear driven by a small pinion, which is operated either by a hand crank or belt and pulley, as desired. On the left the two rolls are connected by link expansion gears, two intermediate ones being required to give the proper motion. The third roll, having the outside profile of the molding, is carried by an independent housing, and is capable of independent vertical and horizontal adjustments for each end, pivoting journal boxes being used. The guide roll is at the left of the front, and is arranged so that the sheet will always follow the shape of the left edge, whether straight or curved. Cylindrical or conical curves are made by the use of the third roll, which is adjusted to give the required radius and angle. A complete set of these rolls for standard moldings—and special ones if ordered—are furnished with each machine. Unfortunately, the machine is not in a conspicuous location, and is apt to be overlooked unless attention is specially directed to it.

BLAKE'S STONE CRUSHER,

manufactured and exhibited by the Blake Crusher Company, of New Haven, Conn., is located in Sec. A 53, Machinery Hall, where it is shown in operation, crushing, with the greatest ease, the hardest kinds of stone, devouring huge cobble stones with apparent relish, and dropping them beneath in fragments of a size suitable for MacAdamized roads. Some idea of the tremendous power of the machine may be found from the fact that the motion of the jaw, which is less than 1 inch, is derived from a pair of fly-wheels, each of whose rims have a cross-sectional area of about 24 square inches, making over 4000 feet per minute. The moving parts are but four in number, thus insuring great simplicity, and all bearings which if worn could possibly impair the operation of the machine are provided with devices by which it may be taken up as often as may be found necessary. The frame is made very heavy at the ends, where there is a transverse strain, while the sides are made with a section which will meet the tensile strain to which they are subjected with an equal resistance, the metal in both the ends and sides being calculated to give a large margin of extra strength to provide against accidents, such as feeding sledge hammers and like material along with the stone. We are informed by the exhibitor that the company have in their office the fragments of several sledges which have inadvertently been passed through their machines without the slightest damage resulting to the latter. This is certainly a pretty severe test of the strength of the machine, and, we think, ought to be convincing. The feet are cast in one piece with the frame, and are very substantial. The motion is derived from an eccentric, which is turned solid on the shaft, and is large enough to give the proper throw without cutting into it. On the eccentric is a heavy vibrator or link extending downward, and at the lower end forming the center joint of a powerful toggle, the back link of which bears against a shoe held between lugs on the frame, so as to be restricted to a horizontal motion. Between this and the end of the frame is a heavy cast iron wedge, which, when moved upward by means of a screw and nut, shortens the distance from the fixed jaw. The front link, working between the vibrator and the moving jaw, renders the connection complete, so that the raising of the vibrator by the eccentric straightens the toggle, thereby forcing the jaw outward with almost irresistable force. The moving jaw is suspended by the upper end, and has therefore a vibrating motion. By raising the back wedge the jaws may be made to work closer by five-eighths of an inch, and further variations are secured by means of extra toggles of different lengths. These variations, as is apparent, are for the purpose of reducing the stone to different sized fragments, as may be required by the class of work to be performed. Connected to the extreme lower end of the moving jaw is a rod extending to the outside of the back end of machine, and through a cylindrical rubber spring, which serves the purpose of bringing the jaw back promptly as the toggle deflects, the latter not being fastened in any manner, but merely slipped into its bearings. The jaws are faced by loose corrugated plates of chilled iron, the joint being a thin film of zinc, which gives a perfectly solid bearing between the rough faces of the castings. A heavy key, bearing the whole length of the jaw, is driven down at one edge and holds the plate securely in place. When the plates become worn, which always takes place at the lower end, they may be reversed and the sharp top edge brought to bear. When completely worn out, they can be replaced by new ones, duplicates being generally furnished with each machine. A machine of this size, when properly fed, will break 7 cubic yards of hard stone per hour, equal to about 9½ tons. The machine has received awards of 37 premiums at exhibitions in this and foreign countries, including one at the Centennial. In addition to the large machine described, another space, A 53, is devoted to the exhibit of several different sizes of smaller ones, including a hand machine weighing, complete, but 100 lbs., for use in laboratories, &c., the construction of which is a fac simile of the large machines.

THE HENDEY MACHINE CO.,

of Welcottville, Conn., exhibit one planing machine and two sizes of shaping machines of the Manville pattern, all of which contain a very excellent feature in the method of obtaining the reciprocating motion. It embodies principles radically different from other machines of this class, which, for several reasons, appear to be of exceptional merit. In planing machines the usual, or, we may say, the universal manner of reversing, is by shifting the belts; while in shapers, the crank motion is invariably used. The Manville machines dispense with both of these devices, and accomplish the change of motion by means of a friction clutch, which is both prompt and powerful in its action, and precludes any possibility of slipping, or variation in the length of stroke, or point of reverse. The motions are obtained by means of open and crossed belts running upon loose pulleys on the driving, or first pinion shaft, the usual train of gearing being employed to give ample power to the cut stroke; the return being accomplished by the same train without further complication. Between the journal bearing of the shaft and the inner pulley is a collar having a short spiral slot. By means of the usual shifter dogs and a rod connected to the collar, it receives a slight oscillating motion, which is changed to a longitudinal one by the spiral slot and a lug working therein, causing each pulley in turn to become fixed to and impart its motion to the shaft. As the lateral motion necessary to release one pulley and engage the other is not more than one-sixteenth of an inch, it is apparent that the reversal of motion is almost instantaneous, and the full power of the belt is obtained to the very end of the stroke, which cannot be the case where it has to be shifted. Every workman will appreciate the importance of this feature, and the prompt and uniform change of stroke at the end of cut, especially in planing key-seats, or any work which requires the tool to work up to any particular point. The extreme simplicity of the device by which these machines are operated, and the slight liability to any wear which could at all impair its action are also very strong qualities in its favor. The head bar of the shaper is driven by a rack and pinion motion, having a train of gearing and the friction reverse, similar to that of the planers, the range of work of which the machine is capable being thereby greatly extended over that of the ordinary crank motion forms. By the use of the shifter dogs the position of the head and length of stroke may be varied without stopping the machine, thus rendering adjustment easy and rapid. A greater length of stroke is possible by the use of the rack, and the speed of the cut is always exactly the same, regardless of the length of stroke. As the driving belt does not shift, the use of a cone pulley of two or more changes is possible on both planers and shapers, which allows of the machine being speeded to the maximum for cast iron or brass, and a slower rate for steel or material of similar nature. The exhibit, although not extensive, is of more importance than would appear from a casual glance, and is worthy of careful examination. The location is in Section D 35, Machinery Hall.

An Imitator of Thomassen.

Among the articles of baggage carried in the express train which left Philadelphia for New York via the Pennsylvania Railroad at 3·10 p. m. on Friday last, was a Saratoga trunk of very ordinary appearance, which was placed in the upper tier of trunks in the baggage car, and handled the same as other baggage.

When the train, which was filled with Centennial passengers, had passed Metuchen, about 22 miles from Jersey City, the baggage-master heard a terrific explosion in the car, which hurled the trucks around and threw the men in the car flat on the floor. Before they knew what had happened flames burst from the pile of trunks, setting fire to the baggage and car almost instantaneously. The fire was spreading rapidly, fanned by the current made by the train's rapid motion, and the train was stopped at Rahway to extinguish the fire. An examination was made at once, and the remains of the trunk which had caused the damage collected. It was found to be a large Saratoga, made of very thin wood. The remains of an intricate little machine were found among the broken boards, which showed that the explosion was the result of design. A small pistol, attached by wire to the brass works of a clock, was so arranged that when the hands reached the figure 12 on the dial the pistol was discharged. The charge was fired into some very inflammable substance, either dynamite or pyroxoline, which was entirely consumed. The damage will not exceed $500.

The infernal machine was so shattered that its exact nature cannot be defined. It was collected and taken to the Jersey City depot, where train-master Charles Watts took charge of it, pending the investigation which the railroad officials are making. In the absence of any other reasonable explanation of this curious circumstance, we hazard the opinion that it was the work of some one who had determined to teach the Pennsylvania Railroad baggage smashers a lesson. To blow a few of them into smithereens would be a rather rough way of teaching them to handle trunks carefully, but it would probably be effective. Let them take warning.

Japan indicates her progress in the march of civilization by adding a new railroad, 30 miles in length, just opened between Osaba and Kioto, making some 75 miles now in operation. With her area of 150,000 square miles, and her population of over 33,000,000, she will undoubtedly, in a few years, have a great system of railroads, and show a corresponding advancement, increase and prosperity.

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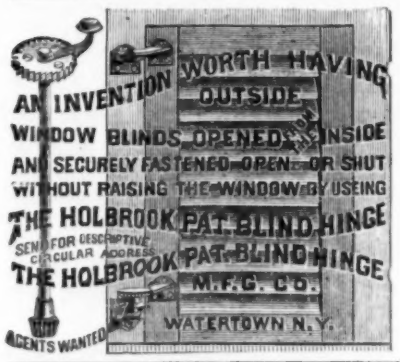

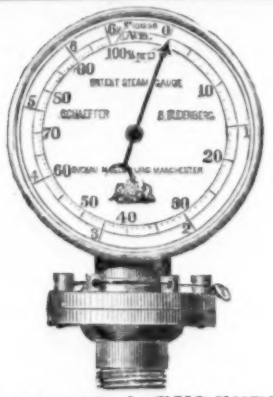

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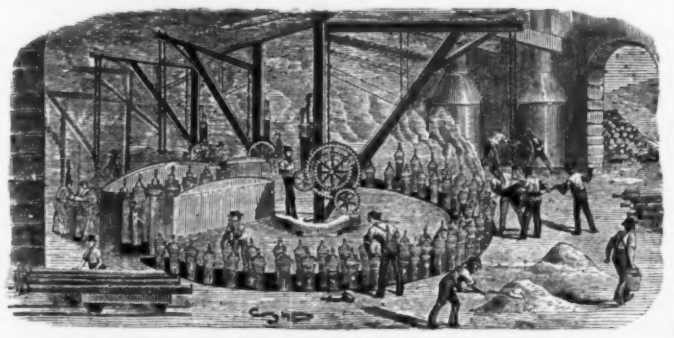

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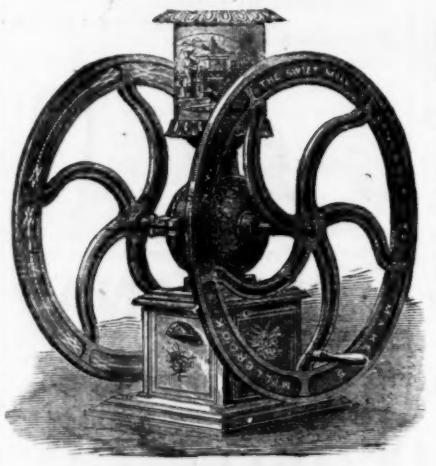

No. 16.

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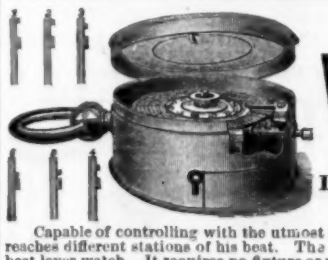

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CAUTION.—The public are notified that in my suit against Imhæuser & Co., of New York, a decree was made in my favor, June 10, 1874.

Proceedings have been commenced against said Imhæuser & Co., for selling clocks contrary to the order of the Court, and especially the clock with a series of springs in the cover, and marked "Patented Oct. 20th, 1874." All persons discovered using these infringing clocks will be dealt with according to law.

J. E. BUERK, Proprietor,

P. O. Box 979. No. 230 Washington Street, Boston.

☞ In sending for circular or ordering the above, please mention this paper.

The Financial Condition of the Reading Railroad.

A correspondent of the *Daily Bulletin*, writing from Philadelphia, gives the following interesting information concerning the financial condition of the Reading Railroad:

Rumor has been busy here since the coal panic with the amount and nature of the floating debt of the Reading Railroad, which has been veiled in almost impenetrable mystery, and in which it no doubt would have still remained had not the clique which undertook to sustain the stock failed of its purpose. Since its collapse, however, the facts have, little by little, leaked out, until we are now enabled to get approximately near to the amount and nature of this secret item. We have so far, however, been unable to get at the dates at which the floating obligations mature. The total may be roughly stated at about six millions of dollars.

It has been put out by the directory that the entire debt has been provided for until April 1, 1877. But we have already shown this to be incorrect in this column. As has been before shown, the London agent and banker of Reading was applied to by the Philadelphia directory last summer for aid, in view of the stagnation in the coal trade and the large floating debt of the road, for which extra provision was necessary. In answer to this application, as shown in a former article, Mr. McCalmont advanced the directory $500,000, gold, and lent it 50,000 shares of Reading stock, both of which were sent here from London in June, or therabout, with the advice that, in Mr. McCalmont's view, it would be best to use this cash and the funds to be borrowed on the 50,000 shares of stock to provide for the floating debt, rather than for sustaining the stock, as had been suggested by the directory. He, however, appears to have qualified this advice by saying to Mr. Gowen and the Philadelphia directors that they were on the spot and should be better able to judge which use of his advances was best. They followed their own course, and not the one preferred by Mr. McCalmont, as has been seen, and held up the stock until this $500,000 in cash and the amount borrowed on the 50,000 shares, at the rate of $35 each, amounting to about $2,250,000, had been exhausted, when the collapse so long to be remembered came and the stock fell from 44 to 19⅝ within a few days. In thus giving the history of this affair we get at the history of the floating debt; for with the collapse in the stock the company's creditors wanted their money, and at this point the financial embarrassments of the company began to entangle it seriously. At this date (September) there was some $2,750,000 of the floating debt due or nearly due, and the holders of it were invited to meet the representatives of the Reading directory to make a readjustment of the floating debt; which was done, resulting in an extension of one-half to some future date, not ascertained, while the other half was paid in cash. For the purpose of providing for the cash payment, two Philadelphia capitalists and bankers advanced about $1,250,000 to $1,500,000, and as security for this cash advance and to cover the extensions of notes or loans the Reading Company is understood to have pledged all the remaining portion of its $60,000,000 issue of bonds, amounting to $5,000,000, the bond being used as collateral at the rate of 90 cents on the dollar. At that time and since, the pig iron of the Reading Railroad and of the Reading Coal and Iron Company has been hypothecated; and that property may now be seen fenced in at Port Richmond, at Reading and at Lancaster, in this State, with this or like legends, "The Pennsylvania Warehouse Company," inscribed upon it. We are further informed that, since then, or at that time, the coal receipts of the road have been also pledged for advances made to meet obligations since matured, one of which was a note for $200,000 to $250,000 held in Boston by a party who was not consulted in the September compromise, and who therefore demanded full payment in cash upon maturity, and was accordingly paid, which occurred about ten days ago, when it was reported the company had gone to protest.

These are the leading items of the floating debt, and are understood to amount to something over $3,000,000; although it is difficult to trace the details of the amount. But, including the June advances of Mr. McCalmont, they are estimated to exceed $6,000,000, including some $600,000 of interest due on bonds in December. As to the advances made by Mr. McCalmont in cash and stocks and sunk in sustaining the stock, that amount has of course been completely wiped out; for the stock bought with this fund at 44 has since been sold out to get money at about $25 per share.

The question is now raised whether McCalmont's advance properly belongs to the floating debt of Reading, or is a private speculation of his own. But no one here has any idea that Mr. McCalmont views it in the latter light, and it is regarded as highly probable that he made the loan on condition that will fairly entitle it to rank among the floating obligations of the company, to be met in the comparatively near future, or so soon as other prior creditors have been satisfied.

Manganese Bronze.—The new alloy which has been introduced under the name of manganese bronze, and which promises to be of great value in the arts, was first made by Mr. P. M. Parsons, who is also the inventor of another useful alloy known as white brass. Manganese bronze is produced by mixing manganese in certain proportions with molten bronze, the result of which is a material of great toughness and possessing remarkable resistance to tensional strain. The new alloy is advantageously used in a variety of cases where gun metal, bronze and yellow metal are ordinarily applied. In a molten condition it is readily cast into any required shape, and in this form it is stated to exceed the best gun-metal in strength and toughness by about 50 per cent., and to be about equal to wrought iron of average quality. It can also be forged or rolled at red heat and drawn into tubes or wire, its strength being increased to that of mild steel by this process, and its toughness being brought up to nearly that of copper. It can also be made of various degrees of hardness. Samples of this metal were tried at the Royal Gun Factories, Woolwich Arsenal, when No. 1 quality was found to have an ultimate tensile strength of 24·3 tons per square inch, an elastic limit of fourteen tons per square inch, and to stretch nearly nine per cent. of its length before breaking. No. 2 quality, which is slightly harder than No. 1, has a high elastic limit of nearly 17 tons per square inch, an ultimate tensile strength of 23·6 tons per square inch, the elongation being ·076 in two inches, although there was a slight flaw in the specimen. The specimens were those of cast metal, and by forging or rolling either quality at a red heat they are stated to acquire a tensile strength of from 29 to 30 tons per square inch, and to stretch from 20 to 30 per cent. of their length before breaking. Some samples of the metal were exhibited at the recent meeting of the Iron and Steel Institute.

Gatling Guns in the English Navy.

The London *News* says that the Gatling gun, which, despite its murderous action, has never found much favor with the British army, is, by direction of the Admiralty, now being fitted in many of the vessels that are preparing for sea. The Alexandra and Shannon are each of them to receive two of these weapons on board, to be especially employed against marksmen posted in the rigging, or hostile marines engaged in firing through the port-holes, or in repelling any attempt at boarding. It is also intended to arm the gunboats and sloops with the same destructive implements for coast and river fighting. Six iron gunboats which are just now being built for service in the China rivers and upon the African coast, will be so constructed as to carry two Gatling guns amidships, and they will be mounted in such a manner that the weapons can be taken on shore in an emergency. The *News* says it is believed that for employment on gunboat service, where a crew of thirty or forty men have sometimes to cope with hundreds of Chinese pirates, or to make way up a river, the banks of which are lined with hostile natives, these Gatlings will be of considerable service. The heavy gun or guns, with which the little craft are armed, are not always to be used with advantage, and the crew is so limited at times as to be quite unable to reply with effect with their small arms. In effecting a landing the Gatlings will be employed in "searching" any bush or jungle that may be near, and thus preparing a safe footing for the marines or blue jackets intrusted with an attack upon a village or stockade, or they may be landed and used with troops on shore in the form of light artillery, their lightness and mobility rendering them peculiarly adapted to such work. There are upward of a score of these gunboats in course of construction for colonial and foreign service, and it is naturally the desire of the Admiralty to omit nothing in their equipments to render the little craft as formidable as possible.

Vegetable Leather.

Under this somewhat misleading title, *Scribner* gives an account of this new product, designed to be a substitute for leather. The materials employed in making it are cotton, or cotton waste or dust, cocoanut fiber and other textile by-products and *fucus crispus*, a marine moss abundant on the New England coast. The cotton or other waste is first carded into sheets of wadding of uniform thickness. These are then laid on polished zinc plates kept at a high temperature, and treated with a decoction of the fucus till thoroughly saturated. The sheets quickly become dry, and in a few minutes may be lifted from the plates and passed between hot polished rolls adjusted to give any desired thickness to the finished leather. These rolls are under heavy pressure and completely felt the materials into strong, tenacious and flexible sheets. The sheets are next coated with boiled linseed oil and dried in the open air, or in a dry-room. When dry, they are coated with vegetable wax, and run through hot fluted rolls, and are finished by a final passage between polished rolls. The leather may then be bronzed, silvered, varnished or otherwise treated like ordinary leather. Another process employs flat plates, embossed or cut in intaglio, the sheets of saturated wadding being placed between them under pressure. They are then passed between hot polished rolls under excessive pressure. The after treatment is the same, but the result gives a more elastic material when finished. To produce a white leather, clean cotton is used, and the whitest pieces of the dried moss, and bleached linseed oil. By means of coloring materials the leather may be given any tint required; and to render it inodorous it is washed in a weak solution of chloride of lime. To make a quality of leather suitable for trunks and shoe-soles, the decoction of fucus is thickened with finely divided cotton or cocoanut waste, and direct and heavy pressure is substituted for the rolling. The material is reported to be a good substitute for leather in the manufacture of harness, military equipments, carriage, table chair covers, and to be available in bookbinding and other trades.

A correspondent of The *Times* London has come across a German sea captain, who has made an interesting discovery in natural history. This fortunate gentleman has not succeeded in bringing home a joint of the sea serpent or a photograph of the kraken; but he has discovered that there are worms which destroy—*i. e.*, eat and devour—iron. "I casually," says the correspondent, "by way of joke, in reply to a kind invitation he gave me to stay at his house, said I would come some day with a microscope to examine the worm which was destroying the German iron clads. His face clouded, and our conversation became very earnest. He returned to the subject again, and asked me if I seriously meant what I had said; and then he told me that there was considerable fear that there is a worm in Wilhelmshafen. He himself had discovered that there were worms which destroyed iron. It is well known that Wilhelmshafen, one of the most valuable ports existing, was long useless on account of a wood worm which destroyed every ship that entered its waters.

Standard Bars.

At a meeting of the National Academy of Sciences, at Philadelphia, Prof. J. E. Hitchcock read an interesting paper in which he presented some curious facts respecting some of the standard bars to which all measures are now referred in France, England and this country. A very old standard was tested a few years ago in Paris. This was a platinium bar; it was compared with an iron one made as a duplicate from it seventy years ago. The platinium had been frequently heated and thoroughly worked before it took final shape; the iron bar was of the best Lowmoor metal. No appreciable difference in length could be detected. Where several iron bars are made as standards, each needs to be brought to a peculiar temperature to measure accurately; no one temperature will do for all. Duplicates of the English standard bars have been made in iron and sent to this country; each of our States is entitled to one of these. Professor Hilgard compared one of them with the bronze bar in England of which they are supposed to be duplicates. He found a variation of 0·00034 in. This is an inadmissable error in a standard. An ordinary, barely perceptible scratch may be a thousandth of an inch wide; therefore the third of that is an appreciable quantity. General Comstock, who was using one of the iron duplicates in the survey of our northern lakes, had it sent to England and similarly tested by comparison with the bronze standard, and the same amount of error was discovered. Professor Hilgard believes that the bronze, not the iron, has changed, and that the alteration is due to one of the metals in the alloy—almost crystalline bronze—being in a state of tension when the standard was made. This view was taken by the International Metric Commission, and consequently in making the platinium standard meter, the metal was remitted and worked over nearly 200 times. The standards made in duplication of this, of cast steel for our States, are correct to the 10,000th of an inch; they differ from each other less than the 100,000th of an inch.

The Resources of Tennessee.

The enterprise of Tennessee in making known to the world the extent and variety of its resources is worthy of emulation by many states more in need of outside assistance in developing their productive capacity. Speaking of the Tennessee Bureau of Agriculture and Mines, the Chattanooga *Commercial*, of the 17th instant, says:

This is undoubtedly one of the best appliances yet invented by any Southern state to invite immigration and capital. It does more than invite, it shows the capitalist where he can best make his investments pay, and points out to the thrifty and intelligent from Europe and the North where the best soils are to be found, their adaptation to different crops, convenience to transportation, &c., &c. The best evidence that the labors of the Bureau are appreciated abroad is the fact that 4000 copies of the "Resources of Tennessee," by Col. Killebrew, the superintendent; 8000 copies of an abridged edition, 2500 copies of the report of the Bureau on the Sequachee Valley and Cumberland table land have been distributed—more than three-fourths of them to parties out of the State.

In this connection it is proper to mention that the gentlemen now building iron works at South Pittsburgh, in the Tennessee Valley, had their attention first attracted to this country by reading a copy of "Killebrew's Resources." This led to investigation, and finally to the inauguration of the enterprise, which will require at least $2,000,000 of capital, every dollar of which comes from England. We are entirely, therefore, within the truth when we say that we may thank Col. Killebrew for planting among us the largest iron works in the South. Had he not written his book those capitalists of Stockton-on-Tees, England, would scarcely have found by searching, let alone by accident, such reliable information, to finally be more than verified by the facts And had the book not borne the stamp of official authority it is not probable our conservative English friends would have paid much attention to its contents.

Nor does the beneficent influence of this book upon our destiny as a manufacturing district end with this one transfer of capital it has induced. Such a beginning is like "the letting out of water." The flow hitherward from this forward must be steady and increasing in volume so long as the well nigh inexhaustible supply of idle capital in England and Continental Europe lasts. This one enterprise will be the parent of many, and each one of its successors will have its influence in inducing others to make like ventures. If the Bureau had accomplished no more this alone more than compensates the State for its cost by tenfold. Yet this is not all nor near all it and its accomplished superintendent have done in this respect, not to speak of others equally important and valuable to the State.

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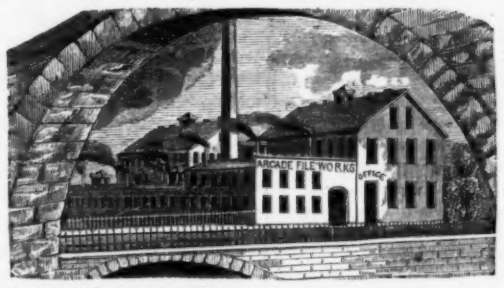

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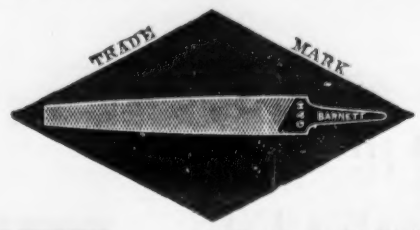

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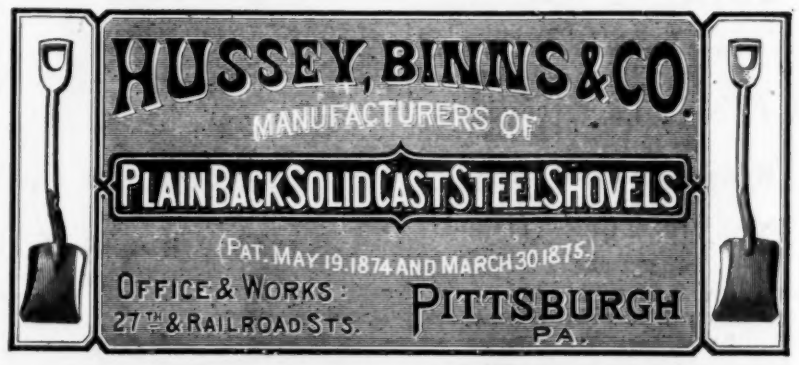

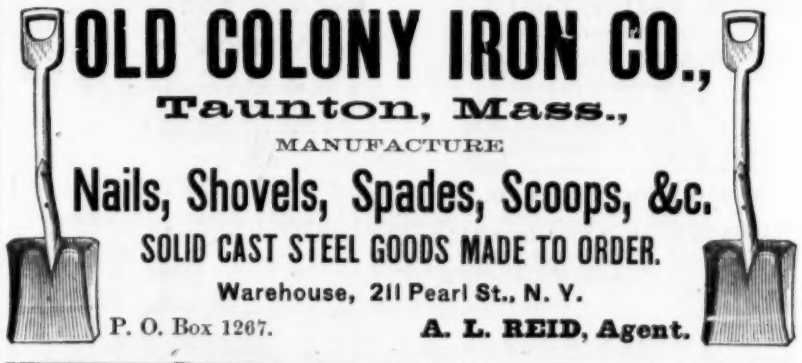

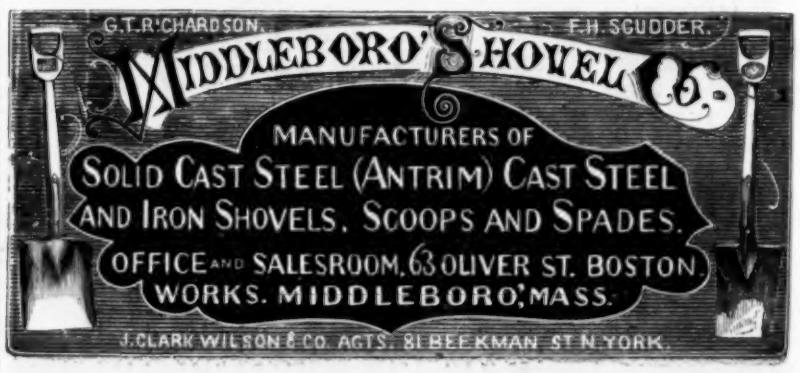

BUSINESS ITEMS.

NEW YORK.

The Bessemer Steel Works, Troy, resumed operations on the 24th, after remaining idle about three weeks.

NEW JERSEY.

Oberlin, Smith & Co., Ferracute Machine Works, Bridgeton, sold at the Centennial on the 24th of October one large power drawing press, two pair of dies, crimpers, etc., to Lecomte & Perkins Mfg. Co., Philadelphia; also, two foot presses, shears, rolls, crimper, 4 pair dies, fire pots, coppers, etc., to A. Mothei, Paris.

PENNSYLVANIA.

Experiments are making at the Cambria Iron Works, Johnstown, to test the possibility of coking as they do in Wales. The following mixture is used: Anthracite culm or slack, 60 per cent.; bituminous coal (Latrobe), 35 per cent.; pitch, 5 per cent. The test is being made in the Belgian ovens of the Cambria Iron Company.

Work at the Lochiel Iron Works, Harrisburg, has been suspended for the present.

The Philadelphia and Reading Coal and Iron Company issued orders forbidding persons picking coal from their dirt banks, but now, owing to the hard times, they have revoked this order and allow parties to pick coal from the banks of the colliery at which they work, but each family is not allowed to pick more than two loads per month. Some persons abused this privilege, and picked as many as 15 wagon loads and sold them, and consequently the company has issued an order that they can pick as much as they please, but dare not, under penalty of being arrested, have it taken away by wagons, but must carry it all away in buckets or wheelbarrows.

The Philadelphia and Reading Railroad Company have put their shops at Mahanoy Plane and Gordon on eight hours per day, and have suspended a number of their hands.

The old furnace at Sheridan is to be put in operation at once.

The Wampum Furnace will blow in some time this week.

The Pottstown *Ledger* says that Messrs. C. H. Cook, Harrison Rigg, W. C. Bishop and Z. T. Bishop, have associated together as the Keystone Tack Company, in that borough, and commenced the manufacture of tacks. At present they have 11 machines going.

The car, machine and carpenter shops of the Delaware, Lackawanna and Western Railroad Company were burned on Saturday night at Great Bend.

The report of the immense saving in fuel in puddling at the Philadelphia and Reading Railroad Company's Rail Mill, at Reading, by the use of coal dust is, to say the least, premature. The process has not, as yet, passed the state of experiment, and it is too early to indicate results. Moreover, the experiments have been made at the steam forge and not at the rail mill.

W. M. Seyfert, of Philadelphia, has withdrawn from the presidency of the corporation of Messrs. Seyfert, McManus & Co., and Geo. F. Baer, Esq., has been chosen.

The old Maiden Creek Furnace, Lenhartsville, is turned into a lime kiln. Burning is to be begun this week.

The Pennsylvania Steel Works, at Baldwin, have suspended operations.

It is rumored that a portion of the new mill of the Phœnixville Iron Company, of Phœnixville, will be turned into a nail mill and the remainder into a wire mill.

The Lebanon Manufacturing Company commenced the employment of more hands last week. They have received orders from Lovegrace & Co., of Philadelphia, for two 40 horse-power engines. They have also orders for one 12 horse-power engine, and 3 three horse-power engines.

It has been incorrectly stated in some of the papers that one of the Glamorgan furnaces, at Lewistown, is about to be blown in. The facts are that the furnace is simply being put in good condition, so that when the demand for iron improves it will be ready to turn out its share.

The two furnaces of the Lehigh Iron Co., at Aineyville, were to have been relighted last week, which fact was officially announced.

The property known as the Standard Tube Works, at Feru Dale, has been transferred to other parties than the original owners, and workmen are now engaged in removing the machinery to the works of W. C. Allison & Son, West Philadelphia Thus it will be seen that the great expectations in regard to these works by business men of this section have vanished. Mr. W. B. Hurd will be retained as business man at the Flagler Horseshoe Works. The workmen of the Standard Works are now employed at Allison's Tube Works, Philadelphia. Another horseshoe machine is building in Boston, and will be erected here as soon as completed.

Forty-four machines are being run at the nail factory of the Pottstown Iron Company.

The Macungie Furnace is in blast and making good No. 1 Iron.

The Pennsylvaaia Iron Works, Danville, have lighted up sixteen puddling furnaces and started the rail mill with a prospect of running all winter.

WEST VIRGINIA.

The Riverside and Belmoht Nail Factories, Wheeling, which have been idle, were to have started last Monday.

There is still some talk of a furnace being built near Cassville.

OHIO.

At Ironton the Iron and Steel Furnace is banked up for want of coke. The Belfont and Etna are in blast. The Lawrence Mill is idle. The Belfont and Ironton are running.

The *Trade Review* says the Cleveland Rolling Mill Company are now working about 3000 men at their various mills in the Eighteenth ward. All mills are run double turn. The daily product of the company is about as follows: In the wire mill, 40 to 50 tons steel wire; in the plate mill, 30 tons; in the rolling mill, 200 tons steel rails, and 30 tons light iron rails; forgings, spring steel and other products, 10 to 15 tons. They also cast about 250 tons Bessemer steel ingots daily.

Furnaces now in operation in Lawrence county are: Olive, Pinegrove, Mt. Vernon, Lawrence, Washington, Vesuvius, Hecla, Buckhorn, Alice and Belfont.

Evan Morris has leased the Girard Rolling Mill for the winter.

Orders for nails have accumulated at Brown, Bonnell & Co.'s so fast that it has become necessary to run the nail factory some three hours extra every night.

The Massillon Iron Bridge Co. have the contract for a bridge in Warren, 210 feet long, at $54 per lineal foot.

The new rod mill at Newburgh is now rolling rods from 45 to 70 pounds weight, and measuring from 350 to 450 feet in length. The present capacity is from 25,000 to 30,000 pounds in nine hours. The mill recently turned out 27,000 pounds of rods in one turn. Formerly only 12 lb. billets were used, and only about 9000 pounds more produced per day of single turn.

The Union Iron Works' Rolling Mills, Cleveland, are idle temporarily, for repairs.

KENTUCKY.

The Louisville Plate Glass Company are in full operation, after some days' stoppage for cleaning and repairs.

Raccoon Furnace will commence its winter nap in about four weeks.

During the last 214 days' blast of Hunnewell Furnace, which commenced on the 1st of January, she produced an average daily make of 16·63 tons of pig iron, or 3560·45 all told, using 500,592 bushels of charcoal, 10,199·65 tons of iron ore and 370·25 tons of limestone, or

140·6 bushels charcoal,
2·86 tons iron ore,
·14 tons limestone,
} per ton of pig iron.

Having now on hand 7000 tons of choice iron ore and 1400 loads of charcoal, with additional stock to come in, the furnace will continue in operation until the 1st of April, provided the hearth will hold out so long.

Pennsylvania Furnace continues working well, averaging 13 tons of No. 1 hot blast a day. With 200 loads of charcoal on hand and 250 more to come in, she will continue in operation until the early part of December.

Bellefonte Furnace will not blow out before Christmas.

ILLINOIS.

The rail mill at East St. Louis has been repaired and remodeled by a new organization, the East St. Louis Iron Co., which will hereafter operate it. The mill consists of 6 double puddling furnaces, 8 heating furnaces, 3 trains of rolls (20, 18 and 14 inch), one squeezer, and the neccessary shears and machinery for a capacity of 100 tons per day. The rails will be made by the "reheating process" originated by the Reading Railroad Company, and of any section from 8 to 72 pounds per yard, either rerolled or new. The officers of the company are as follows: President, B. M. Pratt; vice-president, E. P. Buell; secretary, Alfred Baltzell; superintendent, M. V. Smith. Under Mr. Smith's management the establishment ought to prosper.

TENNESSEE.

The Chattanooga *Commercial* says: Mr. J. F. James informs us that he has received orders within three weeks for over 3000 tons of pig iron, and is unable to fill a single order.

The Tennessee Iron and Steel Company, Chattanooga, announce their readiness to fill orders for all kinds of merchant bar, fish bar, light rails, &c.

Messrs. Cahill & Whiteside, Chattanooga, are making two blowing cylinder heads for the Red Mountain Furnace. They are seven feet in diameter, and when finished will weigh 5000 pounds each.

Major W. R. Thomas, of Rising Fawn, is blowing the Chattanooga Iron Company's Furnace, which is making from 25 to 32 tons of gray forge iron per day, using a silicious, calcerous and argilacious mixture of fossil ores, costing them from $1·75 to $2 per ton in the yard. The monthly yield ot these ores is 55 per cent.

MICHIGAN.

The Escanaba Furnace is being repaired, and it is said the company intend to start it up and run it. The blast will be put in November 1st, and it will run until spring.

The Rolling Mill Furnace is working 35 tons of No. 1 foundry iron per day.

Soft Steel.—The *Chemical News* gives an account of some experiments with the chrome iron alloys, in which a strange phenomenon was observed: It is well known that chromium is very hard, and scratches even hardened steel; meanwhile an alloy was obtained which was malleable, and in a fresh state could be easily bent. It was also remarked that sometimes in opening the crucibles nothing but slag was found, but in breaking the crucibles the alloy was found to be in the bottom of them—which may be attributed to the corrosive properties of the liquid alloy, as this often penetrates even through the bottoms of plumbago crucibles. The above mentioned alloy was analyzed, and the following average composition was found: Metallic iron, 96·40 per cent.; metallic chromium, 2·30 per cent.; carbon traces, lime, silica, 1·30; total, 100. By melting a mixture of cast iron, tin and lead in the following proportions a very liquid alloy is obtained, viz., 79 per cent. cast iron, 19·50 tin and 1·50 lead. This alloy is of handsome appearance and fills perfectly well the casting molds, being thus adapted for use in the casting of small articles.

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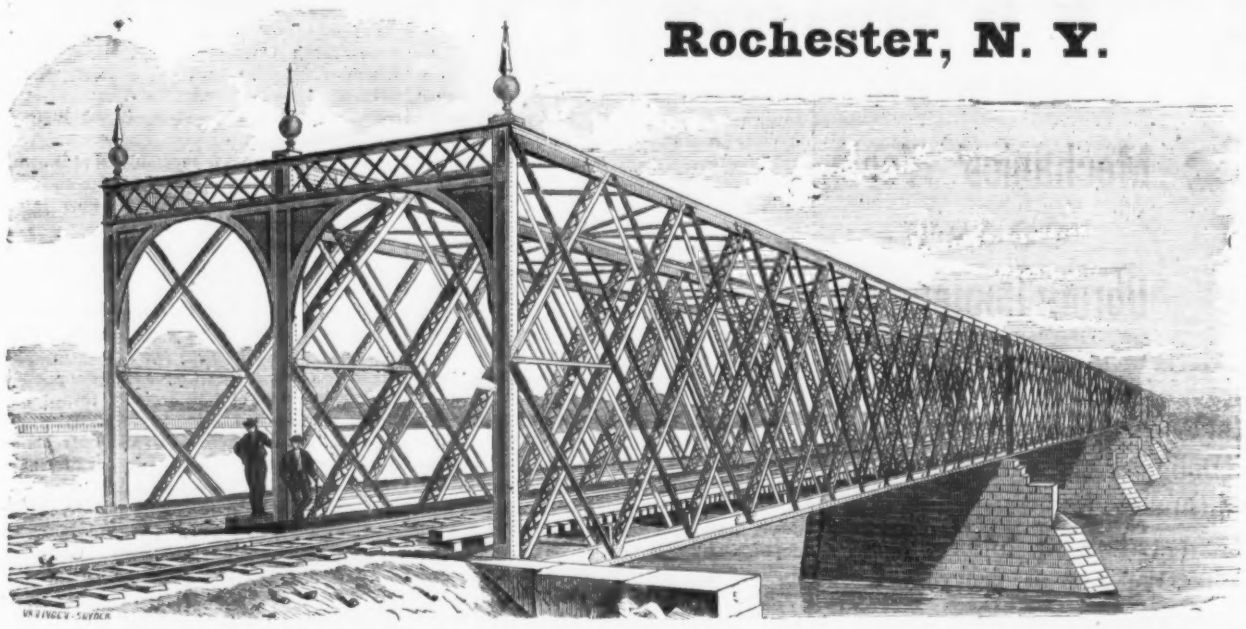

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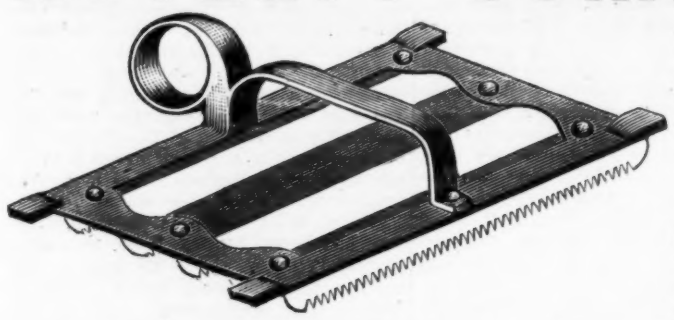
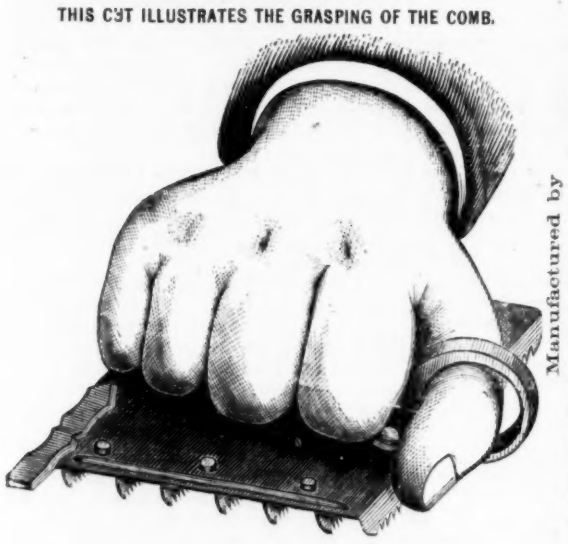


THIS CUT ILLUSTRATES THE GRASPING OF THE COMB.



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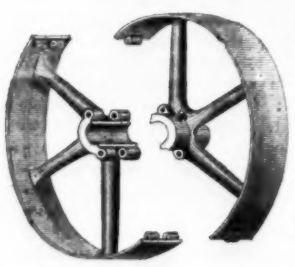

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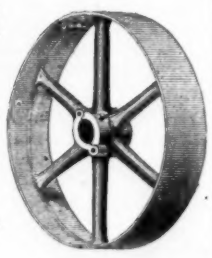

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☞ **Estimates furnished of translations and setting up of Spanish, German and French Catalogues for the Centennial.**

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European Apprentice Schools.

In a communication to the *Evening Post*, of this city, Mr. E. C. Wines gives some interesting particulars respecting the European industrial schools. He shows how the efforts of trades unions to create an artificial scarcity of labor may be met in this country by the adoption of a similar system to that which has met with such great success in Germany, Sweden, France, Russia and other European countries. In Pennsylvania, at present, and that State probably is no exceptional case, the number of apprentices is less than one-fourth the number required to keep the present inadequate supply of skilled labor even.

In Prussia the first industrial or professional school was founded in 1793. Seven others were established in the three following years, and a ninth and last in 1803. All have continued their benificent work to the present time. They were created and at first sustained exclusively by private charity. But very soon the city of Berlin, perceiving and appreciating their utility, contributed one-third toward their maintenance, and since 1798 they have been made a special object of favor by the royal family. Both boys and girls are received into them after entering upon their fourteenth year. At first the number in each school was about fifty, but it has gradually increased to eighty, ninety, and a hundred. The fundamental principle of these establishments is the union of primary instruction and industrial apprenticeship; and through their agency the city of Berlin has constantly in training not less than eight hundred apprentices.

The system has spread throughout Germany. Hamburg, especially, has a model establishment of the kind. By the side of the schools for primary instruction, divided into five classes, are found industrial or professional schools, in which the youths, according to their age and sex, are employed in manual labors, whereby they are prepared for the exercise of different trades. In Belgium, schools established for the professional instruction of workingmen are producing the best effects. M. Rogier, ex-Minister of the Interior, has founded several agricultural schools. For thirty years schools have existed at Ghent and Liege for teaching trades, and more recently, at Charleroi, at Huy and at Verviers.

The system of industrial instruction is admirably organized in Sweden. At Stockholm a number of schools founded by different societies and separately conducted, but placed under a sort of central administration, are devoted to the work of industrial education. These schools are open to all children who give satisfactory proof of the possession of a certain amount of preliminary knowledge. The government has proposed to the legislature the construction of a house capable of accommodating 800 boys and 200 girls as apprentices, beside a central normal school to train mechanic teachers for service in the industrial schools of the provinces. By the side of these schools, and forming the crown of the whole system, is an institute of technology placed under the same central direction, which offers to workingmen and all persons who are occupied in skilled labor courses of lectures delivered by eminent professors. This institute publishes memoirs, replies to applications for information, gives advice to persons engaged in arts and manufactures, and exerts a real and most salutary influence on the mechanical industry and skill of the country.

The first school of the kind in Italy was founded at Florence in 1828, by Count Nicholas Demidoff, a wealthy Russian. It was a free school for the benefit of poor families in that city, and was enlarged and its sphere of usefulness increased from year to year, by the count and his son, Count Anatole Demidoff. A workroom was annexed to the school in 1837. It had been observed that parents withdrew their children as soon as they had reached an age at which they became capable of labor that was a little lucrative. To retain the children the plan was adopted of employing them at some productive labor not incompatible with attendance at school. A master workman gave employment to a certain number of pupils at occupations which were easy and proportioned to their strength and capacity, and which at the same time were adapted to prepare them for apprenticeship to a trade. It was in this manner especially that children from eight to ten years of age were employed in winding raw silk. Similar schools were afterward established in St. Petersburg, some of them for the training of girls in their household duties.

Purification of Metals by Filtration.—Prof. Lampadius, of Freiberg, concluded that at a certain low temperature of fusion the metallic impurities present in the more easily fusible of metals would separate, partially as such, and partially as definite, crystalline compounds, and float in the fused mass, from which they could be removed by filtration. Experiments by him in this direction were so far successful that they expected definite compounds were found upon the filter, but the metallic filtrate was still very impure. The filter was made of quartz sand, slag, etc., which was not wet by the molten metal. Curter, however, according to a communication by him, in trying to adapt this principle to the purification of Bohemian tin, on a commercial scale, sought for material for a filter, which would be wet by the metal to be purified without being dissolved in it. Iron, with its comparatively high temperature of fusion, and its adhesion for tin, as manifested in the tinning of iron, was employed for the filter. Five hundred strips of tinned iron, as thin as paper, about six-tenths of an inch long, and one-fourth as broad, were packed tightly in a square iron frame by the aid of wedges, and the frame was then luted into a suitable opening in the bottom of a graphite crucible. The tin, melted in a second crucible, was allowed to cool until the separation of fine crystals on the surface was noticed, and the thickening metallic mass was then poured into the filtering crucible, when the still fluid pure metal passed through, and a pasty magma was left, in which iron, arsenic and copper, concentrated to a great degree, were found combined with tin, while the filtered tin proved to be almost chemically pure. Fifty hundred weight were purified in the crucible described. Other forms and other materials for filters are suggested, and other possible application of the method, as in the separation of silver from lead containing the former metal.

Machinery Hall to be Left Standing.

We find the following in the Philadelphia *North American* of the 25th instant:

A joint meeting of the Franklin Institute, the Centennial Committee of City Council and the Park Commission, was held at noon yesterday in Select Council Chamber. Mr. Shoemaker, chairman of the Council Committee, stated that the meeting had been called to consider a communication from the Franklin Institute in reference to the future use of Machinery Hall. Mr. Fred. Fraley was introduced. He said: "The managers of the Franklin Institute requested me to say a few words to you in their behalf. The first exhibition ever held in the United States took place fifty years ago under the auspices of the Franklin Institute, since which time they have held periodical exhibitions, all of which have been crowned with the greatest success in perfecting the arts and sciences, as well as perfecting the young mechanic in his studies. The great and, in fact, only drawback heretofore has been the want of a suitable hall in which to hold these exhibitions. The first exhibition was held in Carpenters' Hall, in 1824, and was filled to overflowing. Then the exhibitions were transferred to the old Masonic Hall, in 1837, and in that year we ventured on the great but disastrous experiment of purchasing that hall. From the time we were compelled to part with that building we have been, as it were, wanderers from place to place, holding our exhibitions wherever opportunity offered. When the old Chinese Museum existed we had frequent recourse to it, and the exhibitions thus held have always been a grand success. Last year, you all remember, it was held at the freight depot, Thirteenth and Market streets, the use of which was kindly tendered by the owners. That was the great and crowning success of the Franklin Institute, and was the forerunner of the great Centennial now being held in Fairmount Park. The Centennial caused to be erected a number of buildings which will be adapted for such uses, and around which cluster the most sacred memories, which will last while life does. In consideration of these sacred memories some effort should be made to preserve these buildings. Two have been erected, the Main Building and Machinery Hall, which should by all means be preserved. We want some substantial place to exhibit the products of our country as well as the skill of our mechanics, and no place I think is more suitable than Machinery Hall, offering such superior advantages; beside which it belongs to the city." Colonel Charles Thompson Jones wanted to hear from the Park Commission as to whether they had any objections to Machinery Hall remaining. Mr. Henry M. Phillips stated, on behalf of the Park Commission, that if it was the desire of the city that it should remain, he felt satisfied that the Commission would be willing. Mr. Clark moved to refer the matter to a sub-committee of the Centennial Committee, for the purpose of conferring with similar committees from the Franklin Institute and Park Commission. This motion was agreed to, and the Chair announced the following as the committee: Messrs. Cochran, Jones, Clark, Gates and Wolverton; after which the conference adjourned.

Plowing with Dynamite.—The agents of M. Nobel, the well known inventor of nitroglycerine, have lately found a novel use for dynamite in grape culture, which suggests further possibilities. The mechanical way, literally to "shake up" the earth, and allow the free percolation of water and the access of air to the roots of the vines. To this end holes were made in the soil about 10 feet in depth, and at points where no roots were likely to be injured. Then cartridges of dynamite were introduced and exploded, and the result was that for the entire depth noted, the earth was made loose and friable. The ground, in fact, was not only rendered in better condition than could have been effected by plow and harrow; but every phylloxera, so the writer says, on roots of the vines was killed. The quantity of dynamite used is not stated, but it is likely to have been but small, just enough to shake the soil without blowing up the vines. The idea is one which may, perhaps, find a successful application in some parts of the West.

Tanning Leather in an Hour.—A company has been organized in Detroit to make by a process complete in an hour a counterpart of the "tough old hide, found in the pit when the tanner died," which did such remarkable service in the "One Hoss Shay." The process is a chemical one, performed by the action of certain inexpensive materials, the compounding of which, in the right proportion, is a secret. It is claimed that robes, tanned with the hair on, are soft as the finest wool; hides of the deer, horse, dog, etc., are smooth and soft, while calf and kip show the texture and grain which shoemakers most admire. No bark is required except a little to give the proper color to the leather. Bark is worth $8 to $9 a cord, and about 200 cords are required to tan 1000 hides by the common method. Two cords would be sufficient to give the proper color to the same number of hides, and the saving in this item will be considerable

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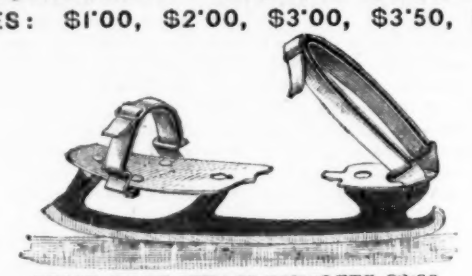

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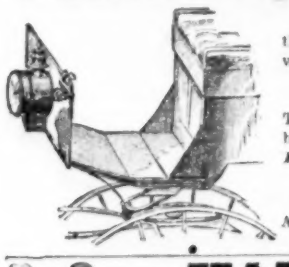

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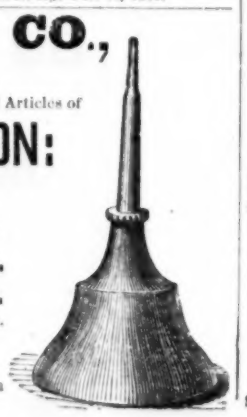

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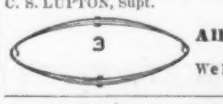

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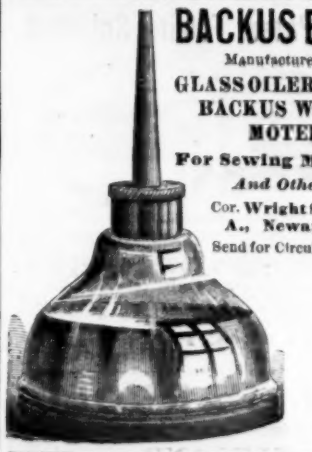

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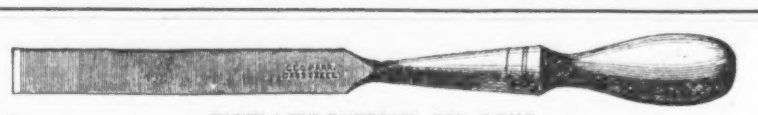

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CONTENTS.

Has the Centennial Paid?

Now that the Centennial is drawing to a close, the question whether or not it has paid is one which will naturally suggest itself to thinking people in all parts of the country. By the standard of profit and loss we naturally and properly measure the success of all ventures and undertakings, and the Centennial will not be an exception to the rule. It has involved a vast outlay of money and labor, only a small part of which will be repaid to those who furnished it. Thousands of exhibitors have been at great expense and trouble to make attractive and creditable exhibits, and it is probable that in a majority of cases the expectations of large and immediate advantage in the way of increased business have been disappointed. Has it paid?

We think it within bounds to say that it has paid a hundred fold. It is, at best, a narrow and short-sighted estimate which measures the benefits of such an exhibition by immediate personal advantage gained by the exhibitor. We do not doubt there are thousands who will never be conscious of receiving a dollar's worth of extra business for every hundred dollars they have expended upon their exhibits at the Centennial. People have come, looked, gone away, and, so far as the exhibitor may ever know, forgotten. But they have not forgotten. Everyone who has visited the Centennial has gone away with larger and more liberal ideas, and a knowledge which will bear fruit for years to come. Vast multitudes whose lives were bounded by narrow limits, and who knew and thought of little beyond the commonplace happenings of their daily experience, have been drawn from home and brought into contact with the activities of a world of which they had but vague ideas at most. They have traveled to and from Philadelphia and New York, and have been brought face to face with the comforts and conveniences of metropolitan civilization. Without fully realizing it, they have imbibed a vast amount of useful knowledge which will not be forgotten. As the result, they will experience new wants and feel new desires, the gratification of which will enlarge the domain of trade and stimulate industry. However general may have been their survey of the Exhibition, they have learned something which can be applied at once in their daily occupations. Beside this, they have had stimulated that pride of American citizenship and love of country which will inspire them to a more hearty loyalty and a more active desire to promote to the fullest extent the welfare of our common country. In such times as these, this of itself is a benefit which will fully compensate the country for the cost and trouble of the Centennial.

As an educator for the producing classes of the country, the Centennial has been of incalculable benefit. The millions of manufacturers and mechanics who have wandered through the aisles of the various buildings, picking up ideas and examining the products of other nations and other sections of the country, have not gone away empty handed. What they have learned will appear in ways which, perhaps, never can be directly traced to the education they have gained at the Centennial, but which must be placed in the scale as a fair off-set to the expended millions. We shall reap the benefit of the education of our mechanics in a gradual elevation of the standards of excellence in manufactured goods, in a closer and more systematic economy, in a more abundant and cheaper production, and in the more general employment of machinery in manufacturing. We shall also feel it in the quickening of the national talent for invention and improvement, and in the more generous recognition of the value of the services of inventors and improvers in promoting the progress of civilization.

In the extension and development of our export trade in manufactured goods, we shall probably feel the benefits of the Centennial to an extent not now appreciated. The testimony which foreign visitors have borne to the variety and excellence of our machinery, our manufactures and our resources, will attract general attention to us and make the extension of our export trade an easy matter. How great are the benefits to be derived from this source will depend upon the enterprise and judgment with which our manufacturers follow up the opportunities thus made for them. We do not imagine they will neglect any chances to extend their trade in markets where our goods have already obtained a foothold, or where they have already gained favor with consumers. We do not know how great the attendance from abroad has been, but it has been largely composed of representative men who have access to the public ear at all times. With but few and unimportant exceptions, they have borne generous testimony to the excellence of American productions, and the correspondents of foreign journals have, almost without exception, done us full and impartial justice. The fact that we are entitled to recognition as occupying a front rank among producing nations has been forced upon the attention of all the civilized nations of the globe, and nothing more is needed to prepare the way for such an extension of our export trade in manufactures as we may find safe and profitable.

However considered, the Centennial will result in benefits so great, so far reaching and so permanent, that the few millions which it has cost cannot be considered as of any importance in comparison with it. As an exhibition, it has fairly exceeded the largest promises of its projectors. It is something which, as a nation, we have a right to be proud of; something which we can remember with satisfaction, and of which the next generation will cherish mementos. It is too near to be seen to advantage, or fully appreciated. A year or two hence we will understand it better, and probably have better reason than now appears to feel satisfied with the results of our Centennial investment.

The interests of the individual are of no moment compared with the interests of the whole American people, and however much disappointment individual exhibitors may feel at the measure of advantage which the Centennial has brought them, they all have reason to feel that by promoting the public good they have benefited themselves. We doubt, however, if any exhibitor can intelligently say it has not been to his advantage to be an exhibitor. Certainly it is too soon to reach such a conclusion. The Centennial is an investment for the future, and the benefits resulting from it may reasonably be expected to be greater in 1886 than in 1876.

The Situation in the East.

In the present condition of affairs in the East, it is difficult to tell exactly how to understand the news of the day. A week ago war seemed imminent; now the outlook is more pacific, but it is by no means certain that "grim visaged war has "smoothed his wrinkled front," or that the long delayed conflict may not break out when those unfamiliar with the mysteries of European diplomacy see least reason to expect it. As it stands now, Turkey will probably accept the armistice which provides for a six weeks' cessation of hostilities in Servia. At the end of that time the war will in all probability be discontinued, or it will be resumed with the armies of the Czar behind the demoralized Servian army which, under the inefficient leadership of General Tchernayeff, has made for itself a very inglorious record, at best. During this six weeks there will probably be a conference of the great powers to consider the situation, and to determine their obligations to Turkey under the unwritten law of nations. As the conditions of the conference prescribed by England are that it shall be called on the basis of a recognition of the integrity of the Ottoman Empire, Russia demands the right to protect in that empire the Christian Slavs, and to see that the Sultan observes the terms which the conference prescribes respecting his Christian subjects. This is giving Russia a large discretionary power in the matter of fomenting and supporting Christian insurrections against Turkish rule, as in the event of such insurrections it is scarcely probable that the Turks would observe any laws save those of barbarous and bloodthirsty warfare. It is evident, however, that should England decline to accept this condition, the Czar would snap his royal fingers at the basis proposed by England, and the proposed conference would end in the exchange of very polite but very unsatisfactory diplomatic notes.

We have indicated what, at the time of this writing, seem to be the probabilities of the immediate future. Among the possibilities may be included the danger that the Turks, flushed with their easy victory last Sunday, by which they cut the Servian army in two and captured much valuable property, may be disinclined to grant an armistice. In this event Russia could adopt but one course. She would be compelled to become an active ally of Servia and to march a formidable army against the forces of the Sultan. In any event the "war cloud" is not dispelled, though it may not be quite so threatening as it was a week or ten days ago.

The Statistical Position of Copper.

Since the middle of September a great change has occurred in the copper markets of Europe and America. The price at London had at that time declined to a point entailing actual loss to the producer in Chili, Australia, at the Cape and in England, and the output in those countries would have had to be curtailed until this decrease of production should have wrought its own cure. The statistical position being favorable at the time, some large operators in London were emboldened to step in and secure on the spot and to arrive upward of 15,000 tons Chili bars at bottom prices. Simultaneously, the French government availed itself of the cable, and bought on favorable terms 2000 tons of our Lake Superior copper. Within the short space of a week the scales were thus abruptly turned in favor of holders on both sides of the Atlantic. The immediate sequel has been a sharp advance of about 10 per cent. The opinion we have frequently expressed during the past year that the consumption of copper is fast outstripping production has been fully verified, and it now remains to be seen whether, during the ensuing months, the actual deliveries to consumption will continue at the same rate, and permit speculative holders to gradually work off their accumulated stock. A pacific solution of affairs in the East would greatly come to their assistance, and upon this they evidently base their calculations. The requirements of Europe for purposes of war may still be extensive, but they will not counterbalance a slackening trade demand. If war were to occur on a large scale, this trade demand would be essentially diminished, money would lose its present ease, and copper might recede to its previous point of extreme depression. Doubtful as the immediate future is in this respect, it would, therefore, be premature to pronounce this sudden rebound a permanent recovery in the value of the metal.

In this country the metal rests on a safe basis. Here actual scarcity exists, for we are shipping off more than we can spare, even admitting that trade will probably remain languid till the spring opening. In any case the statistical position shows every element of strength.

Leaving out the 892 tons afloat from Australia, advised by mail, and the 5800 tons afloat and chartered from Chili, advised by cable, the visible supply in England and France stood as follows:

	Tons.	Price of Chili Bars.
October 1, 1876	31,679	£73
October 1, 1875	30,456	82
October 1, 1874	31,059	81
October 1, 1873	35,405	82
October 1, 1872	41,409	84

Since October 1st the price has improved to £76. 10/, the lowest point in September having been £71.

The West Coast charters to September 15 were 33,600 tons, against 34,600 in the corresponding period in 1875, while the actual exports from there during the first six months of 1876 were 25,592 tons, against 22,288 in 1875. The amount of Lake Superior copper actually shipped from the United States since January 1, 1876, was:

To	Tons.
France	3,077
Germany	1,277
Holland	131
Belgium	130
England	353
	4,968

To which there will be added in the shape of ingots or otherwise some 2700 tons, constituting a total thus far engaged of something like 7600 tons. The shipments that have been going on from here have not influenced the European markets, the visible supply of Chili bars ruling those centers of distribution pretty much exclusively, if we except the transient effect which the newly introduced Wallaroo auctions exercise periodically. Our copper has become a specialty, without which they cannot well get along, and we furnish it for a price at which they are glad to take it, even in anticipation of wants.

Of new sources of supply, gradually attaining an importance hardly foreseen, we may mention the Rio Tinto mines in Spain, evidently destined to play a part of note in the immediate future. The Rio Tinto mines were sold a couple of years ago by the Spanish government to a syndicate of European bankers during a period of financial distress. They held the property only two months, and sold it with a large margin of profit to an English company, which is now making a great success of it. The mines are of unusual richness, a railroad brings the ore to port, and soon the output will equal in extent that of Australia. If the production of copper has become stationary in other parts of the world, our own country included, there is at least one spot where an increasing output is in prospect. Eventually it may suffice to restore the balance between the demand and the supply.

The Centennial Awards.

The uncertainty which has characterized the doings of the Centennial Commissioners in the matter of making the awards, has given rise to no little dissatisfaction among exhibitors. It has been charged, and somewhat generally believed, that the Committee on Appeals, who are overhauling the awards, are making alterations in the reports of the judges, and, through the agency of a Board of Appeal Judges, giving satisfaction to certain malcontents by changing the reports to suit them. In reply to this charge, which is certainly a grave one, a member of the Committee on Appeals, whose name is not given, says:

We have not examined an article or made an award. In one single case a judge of a former group brought us a recommendation for an award signed by himself and approved by one or more experts, claiming injustice had been done an exhibitor. We simply approved it, and sent it to the Commission for their action. As to tampering with the reports, I will say we have never altered or changed a word or letter in a single report. While hundreds have begged us to do so, we have steadily refused. There were two cases where the judge who wrote the reports requested us in writing to change a few trivial words. We declined to do so, but simply pinned the request to the reports and sent them to the commission for their action. We have acted on about 900 cases—certainly not a large number, considering that the whole world is exhibiting. We listen to all, read and carefully consider their statements, and if they come within the rules governing our action, we simply refer them to the group of Judges on Appeals, with all the facts presented to us for their consideration, to report or act upon as they deem proper. I have no doubt a great many, probably the larger portion, will prove to have been fairly examined and a re-examination refused, while those that have not been fairly examined, and are really deserving an award, will have one recommended to the Commission for their final action. * * * The work we are doing is extremely irksome and laborious, but much needed, and when properly understood will, I am confident, receive the full approval of all fair-minded men.

We are sorry that this statement has not been given to the public over a responsible name; but it is, probably, only fair to accept it as a statement made in good faith and true. Whether the public will be fully satisfied with the finished work is, we think, very doubtful. The commissioners seem to have made a mistake in undertaking any action on the reports of the judges; further than to publish them. So far as we can see, it would have been much better to have adhered to the plan originally announced, of publishing the reports over the signatures of the judges and make them responsible for the correctness of the statements made. Changing the system after the judges had done their work, and when the exhibitors were clamoring for the reports which were to give value to the medals, looks very much like a mistake. We hope the result will vindicate the wisdom of the commissioners, but we are not sanguine on this point and do not wonder that exhibitors are impatient to find out what need there is for all this mystery and delay, what the Committee on Appeals and the Board of Appeal Judges are for, and why they cannot have the reports of the judges without any further circumlocution or red tape.

Railway Management.

The experience of the past few years has shown that the successful management of a railroad requires something of special training and peculiar ability. The public have again and again been surprised at finding large roads insolvent, in spite of conditions favorable to success and managements directed by men of acknowledged financial ability and shrewdness. Some of the finest roads in the country are to-day in a very precarious position, and people who know the facts are beginning to feel that railroad investments are, under the most favorable circumstances, doubtful ventures.

In the early days of railroads, when the system was composed of local lines with limited traffic, men whose only recommendation as managers was their general "smartness" were considered competent to take charge of a road. The times have changed, but, unfortunately, managers have not changed with them. A great railroad requires as much special ability for its management as a great army; yet a financier, because he has been able to raise the funds necessary to control as much stock as may be required, considers himself also able to manage its running, buy its timber, iron, engines, cars and supplies, decide upon its policy and select its officers. Many who become presidents or directors of railways, by whatever means, never distrust their own abilities. However new they may be to the business, they assume the reins with a confidence which men really fitted for such positions would not feel. In other cases those in power seem to think a railroad merely a means for money making for themselves, "one end of the road terminating in their pockets and the other in the stock exchange." One of the most glaring evidences of the incompetency of such managers to take care of even the larger affairs of a great road, is found in the insane manner in which many of our leading roads have leased branch roads. Little insignificant feeders, whose stock has never been worth over 50, and which have never paid a cent of dividend, have time and again been leased with a 10 per cent. guaranteed by the leasing road. In other cases 50 per cent. of the gross earnings are offered, when any one acquainted with the line would know that the total receipts but little more than cover expenses. That the policy of obtaining feeders upon such terms is a foolish one, is abundantly shown by the present condition of several roads having a network of lines based on such terms. The financial railway manager who undertakes the control and general direction of the traffic of his road is usually much more at fault than in this in the general policy. The worst results follow when such a manager attempts to direct personally the working of the line. Then the confusion is but slightly better than bedlam to a man who understands how things should be done. Even where executive power is delegated to others more competent, the result is but slightly improved. Good managers will not, as the rule, serve under such superiors. The mental characteristics of the class of men of whom we have spoken are such that they cannot appreciate subordinates who are by nature and education fitted to take control of great railways. We have in mind a road upon which it is proverbial that no thorough railway man is now employed. Such a man would be open to the charge of knowing more than his employers, and that is a crime for which there is no atonement. Incompetency cannot tolerate ability in subordinate positions. As we have already said, a railroad man of the present day needs peculiar natural qualifications, and an education

which shall make him master of the situation. The old saying in the merchant marine that a good captain came "in at the hawse hole and worked his way aft to the cabin," might be modified a little and be equally true on a railroad. The best superintendents that we have known have begun at the brake wheel, or the footboard, or with the chipping chisel, and worked their way up. Such men, when endowed with large executive ability and possessing a good scientific education, are the only ones who can safely be trusted in the executive offices of a railroad company. The railway, when properly conducted, is itself a training school of the most effective character. It is impossible for a man to learn railroading in any other business, and very often one can learn but a single branch and do it well. If a road is to be built and managed solely with a view to the enrichment of stock gambling directors, it makes but little difference whether it is well or badly managed. Even an honest and conscientious board of directors cannot always see the true situation. They are apt to forget that the public are the only ones who are worth consideration, and that neither railroad nor men are of any consequence whatever. If they will take care of the public the public will take care of the road and them. It does not matter whether the road is managed with military discipline or by a fatherly sort of rule; the point to be gained is to take care of the public in such a way that they shall be pleased and satisfied. In the mechanical departments much practical knowledge is needed in order to have even a moderate degree of economy and safety. This cannot be acquired except by practical experience. The constant progress made in all branches of railroad economy makes it very difficult to keep pace with the time, while the almost numberless worthless schemes presented make practical knowledge exceedingly essential. Presidents and directors cannot be expected to possess this knowledge, and their only proper course is to entrust competent and conscientious men with complete executive power and hold them responsible for its proper exercise. Constant tampering with the duties of responsible subordinates is fatal to discipline, and certain to end in bad management. Probably we cannot hope to have a different class of men as presidents and directors, but we can hope that those who gain these positions will learn from experience that they are merely trustees, and that railway management requires a very different kind of talent from that which a business life has called for.

New Publications.

SECTIONS OF STEEL AND IRON RAILS, Manufactured by the Cambria Iron Company, Johnstown, Pa.

Some 60 different lithographed sections of steel and iron rails are given in this work, of weights varying from a Pennsylvania Railroad rail of 83 pounds per yard down to a 16 lb. colliery rail. Each section is given full size, with dimensions, angles of flange head, radii of different curved portions, thicknesses, centers, and in fact all the data necessary for the reproduction of the section. The weight per mile of each section is given both in gross and net tons, and also the names of the roads using the different sections. The book shows pretty nearly every variety of rail which has been in general use in this country during the last 20 years. At the front of the work is a diagram of the average prices of American iron and steel rails, net cash, free on board at Philadelphia, from 1847 to the three months of 1876. This has been compiled for private circulation from the records of the American Iron and Steel Association. In addition to this, a page is devoted to useful information about the materials for track construction, such as the tons per mile required for different weights of rails, spikes, ties, fishplates and bolts, joint fastenings to the ton of rails, etc. Taken altogether, the work is very complete and, what is unusual in publications of this kind, is very convenient in shape.

USE AND ABUSE OF THE STEAM BOILER. By Stephen Roper. Claxton, Remsen & Haffelfinger, Philadelphia, Pa 347 pages.

This work is intended to be a handbook for the fireman, purchaser, and user of boilers, rather than for the boiler maker or scientific man. The work is somewhat smaller than the other handbooks by the same author. It is, however, bound in uniform style with them. Most of the common forms of boilers are illustrated, as well as many of those not usually seen. The author aims, he tells us, at a dissemination of plain, practical and correct information in regard to the functions of the steam boiler, its care and management. The work as a whole is valuable, presenting in a compact form many of the tables, facts and figures which have heretofore been scattered among a wide range of authorities.

CARNEGIE BROS. & CO.'S POCKET COMPANION of Useful Tables, Information Appertaining to the Use of Wrought Iron, for Engineers, Architects and Builders. Compiled and Re-arranged by A. G. Haumann, C. E., Pittsburgh, Pa. 170 pages. Price, $1·50.

The first 18 pages of this pocket handbook, are devoted to different iron shapes, of which there are about 155 shown. Following this there are half a dozen pages illustrating different methods of using iron constructively, as in beams, columns, roofs, floors, walls, etc. Part I, with which the work opens, is devoted to I beams, deck beams, channel bars, angle iron, T iron, etc., with tables of coefficients applicable when used as floor beams, rafters, or struts. In this part the information given is exceedingly full, since in addition to the formulæ for the different shapes, tables are also given showing at a glance the character and endurance of any given form; so that in a large number of cases the problems which arise can be solved by inspection. Part II consists of 80 pages of miscellaneous information for engineers, builders and mechanics, condensed into small space and very judiciously selected with reference to the wants of those into whose hands such a work is to come. A considerable portion of matter for this part of the work has been collected from well-known handbooks and modified so as to be specially applicable here. The tables given are convenient and well arranged for reference. We hardly think this portion of the work could be improved. Altogether the book is of great value, and deserves to be widely known among iron men, engineers, architects and builders generally, as well as among those who have anything to do with iron in almost any form.

Mr. Swank's Reply to Mr. Bell.

In our last issue we printed an abstract of the speech of Mr. Isaac Lowthian Bell before the Liberal Club, at West Hartlepool. The following reply by Mr. James M. Swank to such portions of Mr. Bell's speech as relate to the American iron trade and the last report of the Iron and Steel Association, will appear in the next *Bulletin* of that Association:

We invite attention to the speech by Mr. I. Lowthian Bell, elsewhere printed, which he has just delivered before his constituents, and in which he makes some noteworthy statements concerning the future of the British iron trade. The tone of the speech is not hopeful—the general depression in the iron trade of the world, and the rapid strides of the United States in the supply of its own iron markets and of Belgium in the supply of the British iron markets, being fully conceded. Yet, in view of certain specified advantages possessed by British ironmasters, Mr. Bell does not despair of a healthy revival some day in the demand for British iron. He particularly instances the "small distance" which intervenes in Great Britain between the iron centers and ports of shipment to other countries, and refers to the fact that all the materials used in the iron manufacture in Great Britain are usually found in close proximity; whereas, in the United States great distances usually intervene between the raw materials themselves and between the finished iron and the seaports, while in Belgium the annual output of coal is so meager that no apprehension need be felt that the competition of that country in the British iron markets will ever become formidable. Mechanical puddling and the "willing assistance of the men" in submitting to lower wages are also mentioned as influences that will aid in enabling British ironmasters to hold their own in their own markets and in most of the markets of the world.

The advantages claimed by Mr. Bell, with the exception of mechanical puddling, to which we attach no present importance, are plain to all who have made a study of British resources. He might well and forcibly have added to the list of these advantages the abundance and cheapness of British capital, and the cheapness of ocean freights in British vessels subsidized by the British government and running to every port in the world. No other country has so abundant capital as Great Britain, and no other country possesses her facilities for shipping manufactured or other products to distant markets. How poorly does the United States compare with her in both these respects! Somebody said the other day that we ought to ship steel rails from Philadelphia to Brazil. Very well; where is the steamship line to take them there? Great Britain has several subsidized lines to carry her surplus rail product to Brazil; but the United States government is so chary of its bounties that its own citizens are compelled to receive their Brazilian coffee from the holds of foreign vessels, and to pile up under the shadow of smokeless furnaces and rolling mills the surplus rails which Brazil could be induced to take in exchange for its coffee. Those who say that we should export our surplus iron products would do well to consider the shipping disadvantages under which we labor and the advantages in this respect of Great Britain.

Mr. Bell quite too readily, as we think, admits that the iron markets of the United States are lost to his countrymen, "apart from artificial restrictions"—that is, even if our tariff be removed. The advantages which he claims for his countrymen, and the advantages to which we have referred, do not suggest the inference that Americans could now control their own iron markets without a tariff. We need a high tariff, if for nothing else than to prevent Great Britain from sending us during such a period of depression as now prevails those surplus iron products which she cannot sell elsewhere, and for which she would be willing to accept unremunerative prices. The United States has been Great Britain's slaughter market too often. It will be our own fault if it ever is again.

Few Englishmen, we fancy, will agree with Mr. Bell that the American iron market must be given up. We notice that the editors of the British iron journals do not scare so easily. On the contrary, they are looking forward hopefully to the time when the Morrison tariff bill, or some similar measure, will supplant our present protective system, after which they believe the large shipments of British iron to this country will be renewed. The secretary of the British Iron Trade Association, Mr. Jones, who is also the editor of *The Iron and Coal Trades Review*, may be quoted as representing correctly the hopeful feeling which is shared by all his editorial associates. In his paper for October 6th, in alluding to the establishment in this country of a branch of the steel manufactory of Messrs. Sanderson, Brothers & Co., of Sheffield, he says:

It has been held forth that this is an indication that Great Britain is hopelessly debarred from competing in future with the home manufacturers in the American market. Just at present there is no doubt that America can supply her own wants, and, indeed, she has the resources to supply other nations as well, but these are so unfavorably situated for export that she has not much to look forward to beyond making the iron and steel for her own market. This she can now depend upon as long as the tariff is maintained at the existing rates, but there is a strong and increasing party in the States who are bent upon demolishing the protectionist arrangement, which benefits a select lot of manufacturers, but imposes exceedingly heavy burdens upon the general population, more especially in the Western States. The tariff is liable to be modified, or even abolished at any time, and in that case an enormous trade would spring up between the manufacturers of iron in this country and the consumers in the United States.

We believe Mr. Jones to be entirely right in his view, and Mr. Bell to be wholly wrong in his. If the people of this country think differently from us and agree with Mr. Bell, let them permit the Morrison tariff bill to become a law, and they will soon see how quickly British iron will be unloaded at our wharves.

Mr. Bell makes a strange and most illogical reference to the effects of the protective policy upon the prosperity of the iron business in this country. He admits that through the establishment of this policy the exports of British iron to the United States have fallen during the past six years from almost a million tons annually to a point approaching annihilation, and yet in another part of his speech he does not hesitate to declare that the protective policy in this country "had signally failed," that a "day of reckoning" had come to us as to British ironmasters, and that the "visitation" of pinching times is "perhaps more severe" among the iron manufacturers of the United States than among those of Great Britain. He admits, too, as stated above, that British ironmasters will never again supply our markets as they have done. Now if protection has driven out British iron from our markets and supplied them with American iron of better quality and at cheaper rates than would have been possible without protection; if American workingmen by tens of thousands have been employed at good wages in making this iron; and if protection is to-day enabling our iron manufacturers to tide over a widespread reaction from which Great Britain is suffering fully as much as ourselves, then it has not been a signal failure, but a signal benefit to all our people. How could our iron industry have been established at all, and our hosts of trained native iron workers, whom Mr. Bell so highly compliments, been educated, but for protection? Strange that Mr. Bell should have classed as a failure to us a policy which has benefited us at the expense of his own countrymen; illogical that he should have charged the present depression in our iron business to the protective policy and made no mention of the free trade policy under which the British iron trade is suffering a reaction fully as great as that which affects our own. Only last week we quoted from an English iron authority the statement that British ironmasters were "entering upon the last quarter of the year with works not half filled with orders, and with a large army of iron workers not half employed." A still later official publication states that, of 149 blast furnaces in South Staffordshire, 56 are in blast and 93 are out of blast. Even Mr. Bell himself, in the speech upon which we are commenting, remarked that "the local iron trade was in a position of depression accompanied by an accumulation of commercial disasters to which he had known no parallel in the North of England during an experience of thirty-five years." If such results as these characterize the British iron trade to-day, under a policy of free trade, how illogical in Mr. Bell to attribute the present depression in our iron trade to protection? Mr. Bell has recently visited our country for a second time, and we regret that he did not learn while here that the true cause of our business depression is not protection at all, but mainly a derangement of our finances consequent upon a destructive civil war. We do not say that the depression in Great Britain is a result of free trade, but it looks very much as if it were; as her near neighbor, France, which has a high protective tariff, is exceptionally prosperous, while her other near neighbor, Germany, which recently lowered her duties to gratify English and German free traders, is exceptionally poor and dispirited.

Upon the whole we regard Mr. Bell's speech as a very unfortunate one for his reputation. He gives up the American iron trade we imagine with entirely too much resignation to suit the British Iron Trade Association, of which he is a member, and he errs grievously in attributing the depression in the iron trade of this country to the ascendency of the protective policy. The speech may help still further to reduce the wages of British iron workers, that foreign markets may be the more easily held, "in the way of price," to quote the words of *Rylands' Iron Trade Circular*; but here again it can only be regarded as unfortunate, for we must regret that the system of free trade, in which Mr. Bell believes, should demand of so good a man as he that he engage in so sorrowful a business as a reduction in British workingmen's wages to the limit of human endurance.

Ore Reduction in the Bessemer Converter.—The following recommendations are made by M. Reduer, of Cruzot, based upon experiments in reducing ores in the Bessemer converter: The introduction of one-half ton of pure iron ore into a charge of seven tons of iron, toward the end of the operation, gave an excellent quality of steel with a clear slag containing scarcely any iron. A better mode has been found to be packing the iron ore around the sides of the converter as fettling and sintering it somewhat together by a small charge of coke before running in the iron. One ton of ore to six or seven of iron may be used. The advantages claimed are: 1st. Increased cheapness of the steel; 2d. Increased purity of the steel; 3d. Saving in time and fuel; 4th. Possibility of using an iron poor in silicon. The ore used should not contain over 0·07 per cent. of phosphorus.

The Hudson River Bridge.

Materials for the first caisson of the Hudson River bridge at Poughkeepsie, have been delivered by the American Bridge Co., and work is to go ahead without delay. The *Railway Age* gives the following particulars: The point at which the structure will cross the river is near the ferry dock and at the intersection of the Poughkeepsie, Hartford and Boston and the Hudson River railroads. The depth of water opposite this point averages fifty-five feet for a distance of 2300 feet, and vessels can approach within fifty feet of either shore. The bridge will cross the river on an east and west line, and at right angles to the river. At this point the river has nearly a straight channel for five miles in either direction. The engineer claims that a single span of the bridge would afford a free passage for all the vessels now plying on the river, without causing delays or otherwise interfering with their progress. These facts cause this point to be regarded as one of the most desirable on the river for the construction of a bridge.

The approach to the bridge on the east side is on an iron viaduct, 1800 feet in length, which passes over the Hudson River Railroad at an elevation of 160 feet. The structure across the river will be a truss bridge. The trusses will be sixty feet high, and will be built of iron and steel. There will be four piers in the river, which will be built on caissons, and the average distance from the surface of the water to the foundations of the caissons will be eighty-five feet. At this depth a suitable foundation for the superstructure was found. The piers will be 525 feet apart, and will be built of masonry up to the bridge seat, which is 130 feet above high water mark. The approach on the west side is on a low truss span of 160 feet, which is built on the same plan as the bridge proper. The Bridge Company intend to build a railroad, nine miles in length, on the west side of the river, to intersect the Wallkill Valley Railroad near Gardner, by laying a third rail from this point to the intersection of the Erie Railway. The connection with the Lehigh Valley Railroad at Easton will be completed on a gauge of four feet eight and one-half inches. The engineer's estimate of the expense of building the bridge and its approaches was about $4,000,000, but the contract was made with the American Bridge Company to build the bridge for a sum considerably below this estimate, owing to a great decline in the prices of materials and labor since the estimate was made. The bridge is to have a double track for cars, a wagon roadway, and a way for foot passengers. Toll gates will be erected at each end, and tolls collected of all who cross. The capital stock is placed in the charter at $2,000,000, with the right to increase it to $5,000,000, and the company is authorized to borrow money to an amount not exceeding the capital stock. Any railroad company is allowed to subscribe to the capital stock to an amount not exceeding five per cent of the whole, the company reserving, however, fifty per cent of the stock for individual subscriptions, if they are received to that amount. The estimate of the earnings is about fifteen per cent. on the estimated cost, $4,000,000. This is based on business now being offered by the Erie, Delaware, Lackawanna and Western, and the Lehigh Valley railroads and their connecting lines.

This enterprise has been frequently spoken of as a Boston enterprise, and as being carried forward for the purpose of benefiting the New England States, but it is claimed by the company to be of more importance to the business interests of New York city than of any other place. The Erie Railway Company will have to run its trains about ten miles farther to reach New York city by way of this bridge than it now runs them to reach Jersey City.

Foreign Opinion.

The London *Times*, of August 14, gives prominence to a letter written by an English Judge at the Centennial, who says he saw enough there to convince him that American manufacturers had been making remarkable strides during the past 20 years. Mr. Douglas Galton was a British judge in the group of Railway Appliances, and immediately upon his return home he penned this letter. He had previously visited this country years ago, and during the interval we all know that American manufacturing progress has been remarkable. He speaks of the great advance in our industries as shown by the growth in the amount of coal mined, and says that our higher wages, compared with England, are counterbalanced by the use of machinery to an extent much exceeding that generally in use in England. Observing the substitution of steel for iron rails on our railways, he candidly remarks that the new rails are almost all made in the United States, and that it is not probable that England will be called upon much longer to supply us with rails. He goes further, and, speaking of general manufactures, says England not only can no longer expect to get a market for her manufactures in the United States, but she must be prepared to find our manufacturers competing with her in every market to which they have access. Mr. Galton bluntly tells the *Times* that England should appreciate her true position in this matter, and he closes by urging all Englishmen to visit Philadelphia, where they can see the development of American industry, and meet the leading manufacturers as well as the most prominent Americans of all classes.

As a contrast to this we have to notice a communication from M. de Somerard, chief of the French Centennial Commission, which appears in a recent issue of *Figaro*. The cable reports him as writing to some friend in Germany a series of very absurd calumnies against the management; such as that "repeated attempts had been made by the Americans to set fire to the buildings containing the empty cases of French goods, hoping thereby to destroy the French articles and merchandise stored in the galleries;" also that "the police employed by the Centennial Board are purposely chosen from the worst and most degraded elements in the United States;" also, that the judges are not only venal, but in collusion with the rogues—and many other statements of the same kind, all of which have been published in the Paris *Figaro*, a journal which lives upon sensations. American residents in Paris are said to be greatly scandalized at this publication, and expect the United States Minister at Paris to bring the matter to the attention of the French government, with a view to the Commissioner's recall.

Steel from Cast Iron.

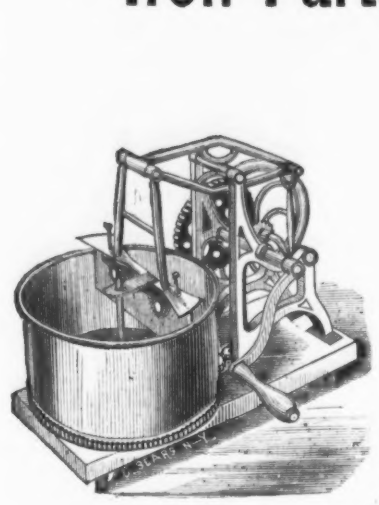
Important improvements have from time to time been introduced by the Foundries and Forges Company, of Terre Noire la Voulte and Besseges, France, for converting cast iron containing phosphoric impurities into steel or metal having the properties of steel, and they have now patented some further improvements. By their patents of 1874 and 1875 they claimed the manufacture by the Bessemer process of steel from cast iron more or less mixed with cinder iron and scrap iron, the cast iron, cinder iron and scrap iron being of any origin or quality whatsoever, provided that the aggregate does not contain more than four parts of phosphorus in the thousand; and that it has been shown in the method of manufacture—that is to say, by using to finish the operation alloys rich in iron and manganese and silicium. And, further, the manufacture of steel by the Siemens-Martin process, using cast iron and scrap iron of any origin and quality whatsoever, provided that the mixture contains not more than four parts of phosphorus in the thousand, and it has also been shown that this operation can only give working results by using as a final addition alloys rich in iron and manganese, or iron and silicium. But it may happen that cast iron suitable for the manufacture of Bessemer steel—that is to say, containing the proportions of carbon, silicium and manganese most conducive to the success of the operation—should be too costly or too difficult of production, whilst cast irons can be cheaply obtained, which from their composition could not be worked in Bessemer's apparatus, and which, notwithstanding the phosphorus contained, would be suitable for converting into steel by the Terre Noire processes. When the difference of prices between such cast irons and cinder irons at command is such that there is an advantage in increasing the proportions of finished cast iron, one of the Siemens-Martin processes consists in refining these cast irons either completely or partially by introducing into the bath oxidating materials, such as ores of iron or manganese, metallic scoria, or even mineral salts, which by their decomposition disengage oxygen. It is even possible to omit the scrap iron altogether and use only cast iron and oxidating materials.

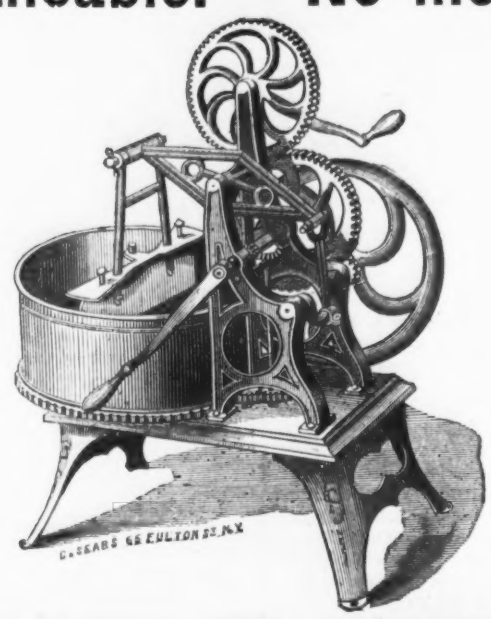
The improved process of conversion, constituting the present invention, produces steels of very good quality, can be obtained by smelting in a furnace, whether with fixed or moveable bottom or whatever may be the plan of furnace, impure cast iron containing up to four parts of phosphorus in the thousand, and in refining these cast irons by metallic oxides or scoria or salts, provided that the operation is always finished by an addition of ferro-manganese and ferro-silicium, whose function it is to deoxide the liquid mass, introducing only insignificant proportions of carbon. By these processes alloys of iron and manganese can be obtained, containing as much as 65 per cent. of manganese, and the use of these alloys render the process of conversion more certain and less costly. The chief features of novelty are the using as a final addition in manufacturing steel by the processes mentioned rich alloys of iron and manganese in the proportion of from 30 to 80 per cent. of manganese of iron, and silicium in the proportion of from 6 to 20 per cent. of silicium, and in proportion to the quantity of manganese that is added to the bath, whether 1 or 2 per cent. of the manganese or one-half or 1 per cent. silicium, starting with cast iron of a phosphoric nature, containing as much as 4 parts of phosphorous in the thousand, and refining the cast irons by metallic oxides, scoria oxidating salts in any apparatus whatever. In carrying out the process the workmen take cast iron containing from one to four parts in the thousand of phosphorus, selecting that which is white by preference; proceed to melt it in a furnace, such as that known as the Martin-Siemens furnace, or other known furnace, either fixed or movable, capable of giving the same degree of heat, or introduce the liquid or semi fluid iron in one of the said apparatus and proceed to refine it by the successive additions thereto of rich minerals, containing not more than three parts in the thousand of phosphorus; when the refining is so far advanced that the metal only contains traces of carbon, they add to the bath from 1 to 2½ per cent. of ferro-manganese containing at least 50 per cent. of manganese, and mix and run it. Metal obtained by this simple and economical process contains from one to four parts in the thousand of phosphorus and traces of carbon and manganese, and is well adapted for all the uses to which steel is now applied. It is mentioned that ferro-silicium may be substituted for the ferro-manganese when desirable.

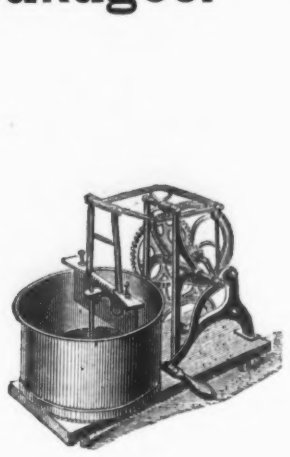
American Meat and Vegetable Choppers.

IMPROVED 1876.

Iron Parts Malleable. No more Breakages.







FAMILY SIZES.

SHOULD BE IN EVERY HOUSEHOLD. SAVE THEIR COST IN LABOR EVERY YEAR.

A good Meat and Vegetable Chopper for preparing the various articles of food which require chopping, such as Mince-meat, Salads, Hash, Fish, Fruit and Vegetables of various kinds, has come to be considered as much of a necessity in every well-conducted household as a Clothes Wringer or a Cooking Stove, and the question which the good housewife asks is no longer "Do we need one?" but "Which is the best?"

For Hotels, Bakeries, Restaurants and Public Institutions, where large quantities of food are required, such a machine is absolutely indispensable.

Of the hundreds of Choppers thus far invented, the only one that has stood the test of time and proved a *perfect success* is the "American," which has been six years before the public, and of which

MORE THAN 60,000 ARE NOW IN USE,

the demand having constantly increased until its annual sales now amount to more than three times that of all other Family Choppers combined—facts which are sufficient evidence of their superior merit. In addition to other improvements, all the iron parts that require strength are now **Malleable.**

DESCRIPTION, SIZES AND PRICES.

No. 1, Small Family Size, 8-inch Cylinder, cuts 3 lbs. meat in 3 minutes.....Price $5·00
No. 2, Large Family Size, 10-inch Cylinder, cuts 5 to 6 lbs. in 3 to 4 minutes..... " 7·50
No. 3, "Farmers' Sausage Cutter," 12-inch Cylinder, cuts 8 to 10 lbs. in 3 to 4 minutes..... " 12·00

BUTCHERS' SIZES.

They will do More Work, and Require Less Power than any other Chopper yet Invented.

They do not **grind** or **tear the meat,** leaving it in **strings**—a process extremely detrimental to its quality—but **cut** it evenly and as fine as may be desired.

DESCRIPTION, SIZES AND PRICES.

No. 4, 15-inch Block, Weight, 100 lbs., cuts from 60 to 75 lbs. an hour .....Price $25·00

For small Butchers and Marketmen the **"American No. 4" has no equal.** It will cut one-third more meat than any Chopper in market with the same power, while its price is 50 per cent. less than any other that will cut an equal amount.

No. "B." 18-inch Block, Weight, 250 lbs., cuts from 80 to 100 lbs. an hour.....Price $50·00

This is a new size introduced last season, and will be found to meet the requirements of a large number of Butchers. It is in all respects similar to the No. 5, which has given such universal satisfaction during the past six years, with the exception that it has but *one* crack or handle, and a Cylinder 2 inches smaller in diameter.

No. 5, 20-inch Block, Weight, 300 lbs., cuts from 100 to 125 lbs. an hour.....Price $60·00

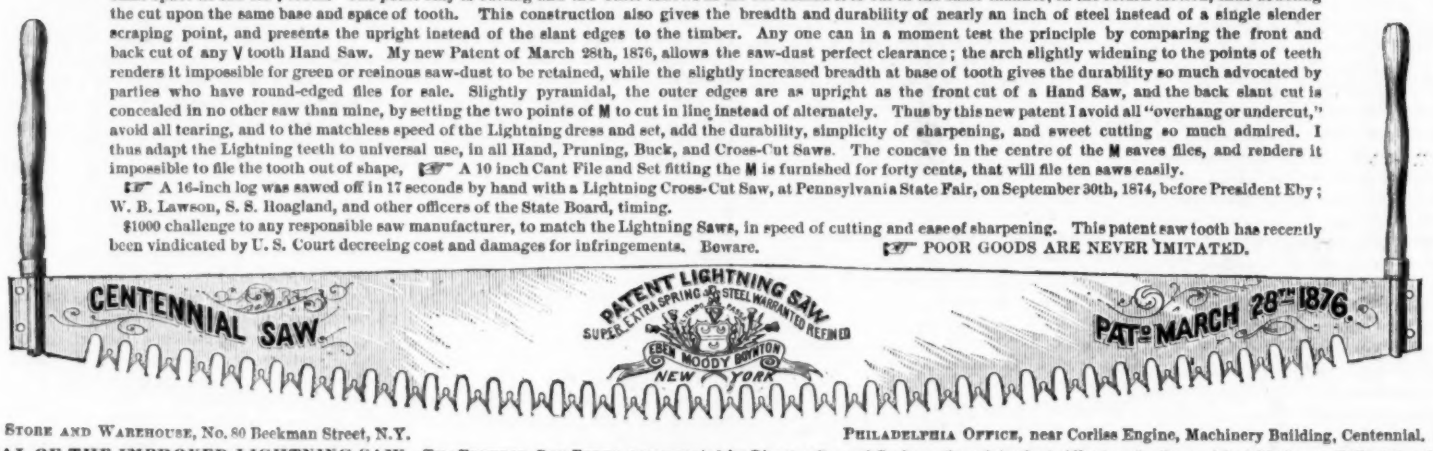
This Chopper is too well and too favorably known to need either an extended description or recommendation. It is pronounced by Butchers who have had it in constant use for six years, **"The Best Sausage Cutter in America."** Having a double crank, it can easily be operated by two boys; or, by putting a pulley in place of the crank, it can be arranged to run by power at a trifling expense.

BAILEY WRINGING MACHINE COMPANY, 99 Chambers Street, NEW YORK.

Any Dealer is aware that in an ordinary Hand Saw, the front cut is the effective cut, and drawing back the Saw has little effect, by reason of the slant edges riding over the fiber as the Saw is drawn back. The difference between the front cut of a Hand Saw, and the back cut, is the difference between the Lightning Saw teeth and all others; for all other saws are set one point and ride on slant edges. By setting two points of my M the same side, and the next two the other, I conceal the slant between them, and operate wholly by the outside of a nearly vertical M tooth. Standing nearly vertical the two points of the M occupy the same space as one old V tooth. One point only is cutting and the other follows in the slit behind it to cut in the same manner, in the return motion, thus doubling the cut upon the same base and space of tooth. This construction also gives the breadth and durability of nearly an inch of steel instead of a single slender scraping point, and presents the upright instead of the slant edges to the timber. Any one can in a moment test the principle by comparing the front and back cut of any V tooth Hand Saw. My new Patent of March 28th, 1876, allows the saw-dust perfect clearance; the arch slightly widening to the points of teeth renders it impossible for green or resinous saw-dust to be retained, while the slightly increased breadth at base of tooth gives the durability so much advocated by parties who have round-edged files for sale. Slightly pyramidal, the outer edges are as upright as the front cut of a Hand Saw, and the back slant cut is concealed in no other saw than mine, by setting the two points of M to cut in line instead of alternately. Thus by this new patent I avoid all "overhang or undercut," avoid all tearing, and to the matchless speed of the Lightning dress and set, add the durability, simplicity of sharpening, and sweet cutting so much admired. I thus adapt the Lightning teeth to universal use, in all Hand, Pruning, Buck, and Cross-Cut Saws. The concave in the centre of the M saves files, and renders it impossible to file the tooth out of shape, ☞ A 10 inch Cant File and Set fitting the M is furnished for forty cents, that will file ten saws easily.

☞ A 16-inch log was sawed off in 17 seconds by hand with a Lightning Cross-Cut Saw, at Pennsylvania State Fair, on September 30th, 1874, before President Eby; W. B. Lawson, S. S. Hoagland, and other officers of the State Board, timing.

$1000 challenge to any responsible saw manufacturer, to match the Lightning Saws, in speed of cutting and ease of sharpening. This patent saw tooth has recently been vindicated by U. S. Court decreeing cost and damages for infringements. Beware. ☞ POOR GOODS ARE NEVER IMITATED.

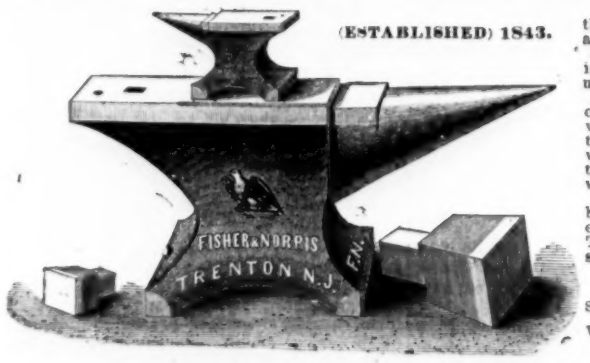


STORE AND WAREHOUSE, No. 80 Beekman Street, N.Y. PHILADELPHIA OFFICE, near Corliss Engine, Machinery Building, Centennial.

TRIAL OF THE IMPROVED LIGHTNING SAW.—THE EMPEROR, DOM PEDRO, accompanied by Director-General Goshorn, Superintendent Albert and others, visited Machinery Hall, at the Centennial, on the evening of June 28th. Among other things inspected, at the invitationof E. M. Boynton, of New York they witnessed a trial of the new Lightning Saw, patented March 28, 1876. Two men with one of these saws cut off a sound log of gum wood, one foot extreme diameter, in seven seconds, or at the rate of a cord of wood in five minutes. Messrs. Corliss, Morell, Lynch and other members of the commission witnessed the trial and timed the cutting. The Emperor remarked that was fast, very fast cutting. Last evening the Emperor made another examination of the saw.—*Philadelphia Press*, June 30.

BOYNTON'S SAWS were effectually tested before the Judges at the Philadelphia Fair, July 6th and 7th. An ash log 11 inches in diameter was sawed off, with a 4½ foot Lightning cross saw, by two men, in precisely six seconds, as timed by the chairman of the Centennial Judges of class 15. The speed is unprecedented, and would cut a cord of wood in four minutes. The Representatives of Russia, Austria, France, Italy, Spain, Belgium, Sweden, England, and several other countries were present, and expressed their high appreciation.

THE EAGLE ANVIL !!WARRANTED!!



(ESTABLISHED) 1843.

These Anvils are *superior* to the best English, or other Anvils, on account of the peculiar process of their manufacture (invented and used only by this concern), and from the quality of the materials employed.

The best English Anvils become hollowing on the face by continued hammering in use, on account of the fibrous nature of the wrought iron—causing it to "settle" under the face.

The body of the Eagle Anvils is of crystallized iron, and no settling can ever occur; the steel face, therefore, remains perfectly true. Also, it has the great advantage that being of a more *solid* material, and consequently with less rebound, the piece forged receives the full effect of the hammer, instead of a part of it being wasted by the rebound, as of a wrought iron anvil. An equal amount of work can, therefore, be done on this Anvil with a *hammer one-fifth lighter* than that required when using a wrought iron anvil.

The working surface is in *one piece* of JESSUP'S BEST TOOL CAST STEEL, which, being accurately ground, is hardened and given the proper temper for the heaviest work. The *horn* is covered with and its extremity made *entirely of steel.* The body of the Anvil is of the strongest grade of American iron, to which the cast steel face is *warranted to be thoroughly welded and not to come off.*

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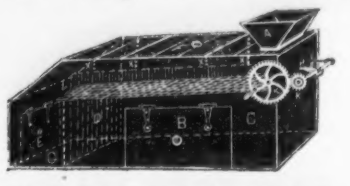

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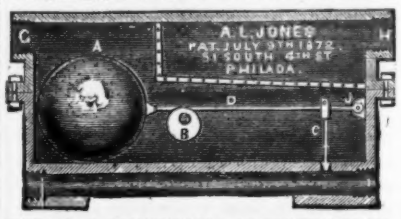

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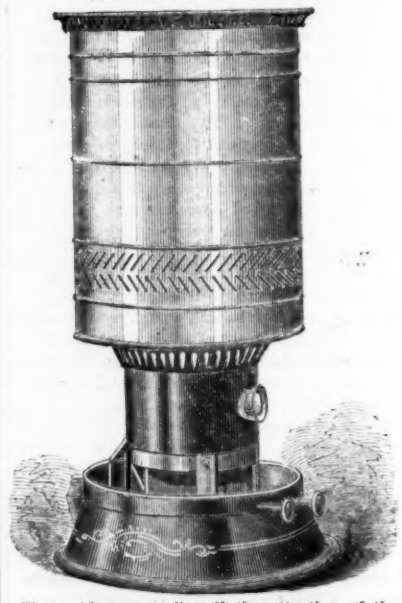

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Industrial Reform in France.

A remarkable convention of workingmen was lately held in Paris, which merits much more than a passing notice. Three hundred and fifty delegates were present, representing all the principal industries of the country. Unlike previous gatherings of this kind it confined its attention wholly to the practical consideration of practical subjects. There was no discussion of politics, no time was wasted in building air castles of social reform and the spirit of the commune was not manifested in anything said or done. The convention had many grievances to complain of, but they were such as in the main grew out of simple economic conditions, and were susceptible, therefore, of easy remedies. One of these related to the unfair competition arising from the sale of convent and prison manufactured goods. It is affirmed that both convents and monasteries have of late years been turned into regular factories; that the nuns, moreover, take charge of numbers of little girls whose mothers are engaged in factories, and teach them various industries from patterns supplied by outsiders, and that the labor of these children is thus placed in competition with that of their parents, to the disadvantage of the latter. As an illustration of the extent of this competition, it is stated that no fewer than 150 convents work for one drapery shop in Paris alone. To restrain this competition legislation is commended. Much complaint was also made as to the ruinous competition of prison labor, but no one seemed to have any remedy to propose. There was a time when nothing was too preposterous for a French workingmen's congress; a proposition to abolish the prisons, in order to get rid of convict labor, would have been received as an advanced idea. Now it is simply projected as a hardship which is not in a shape to be dealt with, save as subject for passing regret, with an expectation that something can be found in the future to remove it. The last annual return, it is stated, shows 915,421 days' work in sewing, shoemaking, false hair preparing, glovemaking, &c., by 2933 female prisoners. Another complaint is that women leading an immoral life employ sempstresses at low wages for the purpose of cloaking their vice, selling the work without a profit. Sewing machines, it is likewise alleged, are injurious to health when worked for hours at a stretch, and relays of workers with improved seats have been suggested to remedy this evil. Peasant women, moreover, are said to work for drapers without other recompense than material for their own clothing; ploughmen, too, become *coiffeurs*, as if that trade were not especially fit for women only. Yet another grievance is that drapers employ male assistants to measure, cut out, and even to fit dresses. The remedies advocated are technical education, the allocation of certain employments to women, and a fixed tariff for work executed by both sexes. Industrial co-operation for women, not all its members necessarily receiving equal wages, was also strongly urged, as likewise workingmen's syndicates, the functions of which should consist in the promotion of education and libraries, consumers' co-operative societies, and superannuation funds. We have no room to go over the whole ground traversed by the Congress, but enough has been said to corroborate what we have said about the disposition of its members to turn over a new leaf, letting politics and the reconstruction of society alone, in order to deal with the more practical matters before them. The result, undoubtedly, will be the application of many valuable reforms calculated not only to improve the condition of the workman himself, but what is scarcely less important, the maintenance of French industrial skill at the high standard that it has always occupied among the European handicrafts. We have been accustomed to look upon the French as a nation of impracticables—"idealogues"—as the first Napoleon called them. We venture to say, however, that it has been many years since we have had as sensible and well ordered a discussion in any American labor congress. Since the end of the Franco-German war, and the organization of the present French Republic, the people of France have grown wiser, and what it has lost in military prestige it is now in a fair way to regain by substantial triumphs in the arts of peace.

The Berlin papers record the bursting of a 15 ton Krupp gun, which exploded during proof at Kumersdorf. At the fiftieth round it was broken in two pieces; the forward portion was projected about 20 yards, and after turning over several times, struck the ground, in which it formed a large pit. The rear part of the gun, weighing more than 10 tons, was thrown in the opposite direction about 12 yards from the carriage. The projectile, curiously enough, continued its flight unaffected. It is not stated whether the gun was built on the latest model adopted by Krupp; probably it was, as we believe all the guns now made at Essen are steel jacketed. This explosion is another proof of the unreliability of steel when employed, as in the Krupp guns, especially for large calibers. It will be remembered also that there was recently a violent and disastrous explosion of another gun at Podgoritza.

An ingenious device for preventing the formation of smoke in fires under boilers has been patented in England. The plan is to bore, just above the fire door of the boiler, a couple of circular holes of about 2¼ inches diameter, and then insert two pipes, which run at the top of the furnace for about one-third or half its distance. A small pipe connected with the boiler drives a jet of steam into each of the pipes, which thus creates two strong draughts of air. This air is rarified by the steam, and is driven right into the center of the flame and smoke from the furnace, thus precipitating the carbon and preventing its escape in those dense clouds which are so offensive in large cities. It is said to accomplish the results desired.

Feather Respirator.—A cheap and effective respirator for excluding dust from the lungs in grinding, shoe-buffing, and the like dusty occupations, is described in *Scribner's* for November. Paper and feathers and similar ready materials are the ones used. The guard for the mouth and nostrils may be made of stiff cloth or paper in any convenient size and shape. The opening for air must be in the form of a pipe or tube about 3 centimeters (1 3-16 inches) in diameter, and with the open end pointed downward just below the mouth. Select a number of fine soft feathers, like the leg feathers of a pheasant, and lay them close together on a piece of tape, and fasten the quills down with glue. In this way, make a fringe of feathers on the tape 50 centimeters (20 inches) long. Wind the tape round the outside of the table of the respirator, so that the feathers make a thick fringe below and about the mouth of the tube. In use, the respirator may be secured over the mouth by a tape round the head. In breathing through the tube, each inhalation will draw the feathers inward, till they close it securely against the entrance of dust. At the expiration the feathers will fall apart, and leave the tube clear for the escaping breath.

A Large Order for Steel Rails.—The Paris, Lyons and Mediterranean Railway has placed orders for 215,000 tons of steel rails. The whole order will form a sort of "stock job" for about 5 years, for the Chatillon, Commentry, Terrenoire, Creusot, Denain and Firminy establishments, and will furnish sufficient material for a renewal of a third of the whole length of the permanent way of the company, releasing an enormous quantity of old material. If general business improves, the price of steel is certain to rise, and if it goes up to its normal rate of $55, the Paris and Lyons Company will have netted over $1,550,000 on its order, which it gave out at the rate of $47·77. The Chatillon, Commentry, Commentry-Fourchambault, the Marine Steel Works, the St. Etienne Steel Works, and the Firminy Steel Works were not long since joined in a syndicate for opposing the competition of certain steel works, and for the mutual division of large orders. This syndicate was dissolved just before the large order we have spoken of was given out.

Sheffield Armor Plates at Philadelphia.—The London *Times* says: In Machinery Hall Great Britain has been most deficient in the supply of forgings, or specimens to show the working qualities of iron and steel. This is much to be regretted for various reasons. The position is, in some measure, redeemed by two exhibitors, Charles Cammell & Co. and John Brown & Co., both of Sheffield, who submit a few magnificent specimens of their armor plates in order to show the high qualities of the materials used in their manufacture. Most of the plates have been tested with shot, which brought out the remarkable malleability and other properties of the iron. Nothing but the finest quality could have submitted to such peculiar changes of form around the parts indented without producing fracture. These specimens excited far greater interest than would have been bestowed on new plates, and have done much to enhance the British display at Philadelphia.

Trade unionism has been brought to perfection in Warwickshire. You get it there unadulterated—the real article. It is the kind of unionism Ebenezer Elliott had in his mind when he wrote—

> What is a Unionist? One who has yearnings
> For an equal division of unequal earnings;
> Idler or bungler, or both, he is willing
> To fork out his penny, and pocket your shilling.

A "lodge" of miners in Warwickshire has contributed £6000 to the union's funds in four years and a half, but the members have received £13,000 from the union in the same period as "strike pay" and "benefits." The union is just beginning to suspect that its connection with this voracious "lodge" is unprofitable. A "lodge" so disposed might go on "striking" all the year round, and demand "pay" from the union to which it was affiliated. If the scheme for the federation of trades unions were adopted, the men of any trade might "strike" and fall back on the accumulated funds of all the unions in the Kingdom. One "lodge" might calmly set about spending the money of the "federated unions"—as mites eat into a cheese.

The New Orleans *Times* says that the progress of work on the Mississippi jetties is more encouraging. The least depth at the mouth is 23 feet and three-tenths at mean low tide. In the narrowest part of the channel, which is 185 feet wide, soundings indicate a depth of 20 feet, which, at high water, will admit of the passage of the most heavily laden vessels, while at the head of the Pass the present stage of low water has made it necessary to put a dredging machine into operation to assist the current in the work of scouring, which thus far has deepened the outlet to the sea from about seven feet to what it now is. The works are being rapidly pushed to completion, a full quota of hands being constantly employed.

A local sensation has been created in Jersey City by the discovery of a gold mine while sinking a well. The workmen, after passing through a vein of iron ore, struck a quartz vein containing gold at a depth of 900 feet. Geologists suppose that this quartz belongs to the Appalachian range, running from Nova Scotia to the gulf and having outcroppings in Virginia, North Carolina and Georgia.

American Institute of Mining Engineers.

(Continued.)

The following is an abstract of the discussion which followed the reading of Mr. Wetherell's paper on anthracite mining, an abstract of which was printed in our issue of last week. The discussion brought out some very interesting facts respecting coal mining:

Mr. R. P. Rothwell stated that though the method of hauling by chains had not been adopted in the anthracite regions, he had seen something very similar in some of the bituminous mines near Pittsburgh. He would like to ask Mr. Wetherell if he had any data which would show the waste of the different systems —that is, what per cent. of the theoretical amount of the coal was sold. Some years ago he had occasion to make a careful calculation in a mine worked by the men. The coal had been badly squeezed, so that when it began to run it was allowed to continue until what came out of the breasts was too badly mixed with slate to pay for separating it. The amount marketed was about 30 per cent. of the theoretical amount of the coal.

Mr. Wetherell stated that he had made no such calculation.

Mr. E. B. Coxe stated that sometime ago he calculated the percentage marketed of the theoretical amount of coal in a very large colliery on the Mammoth vein, some 1,000,000 tons, and, calculating the specific gravity at 1·55, the amount marketed was 28 per cent. This did not include the amount of overweight nor what was burned at the mine. There were also squeezes which would at places reduce the thickness of the vein, but he would say that with our present system of mining 28 per cent. to 30 per cent. of the theoretical coal is all that we can expect to win.

Mr. O. J. Heinrich spoke of the extensive wastefulness of the methods of mining, and the effect of this in the competition that is coming with the bituminous region. The amount of bituminous coal can hardly be expressed in figures. Anthracite is limited, and it is a serious question whether you had not better begin to economize. Your rival (bituminous coal) can afford to lose more than you can.

Mr. Wetherell said no one will attempt to defend the present processes of mining in the anthracite region.

Prof. R. W. Raymond said that the theory of mining is to rob the pillars in working backward, though the practice is different, and a large amount is lost in not getting the pillars. This loss is not from the crushing of the pillars, but from the filling of the gangways.

A gentleman stated that at the Longdale mines of Mr. Firmstone, in Virginia, all of the pillars had been robbed in working backward, but one very small pillar having been lost.

The question of the manner of working breasts was discussed at some length, the impression prevailing that the best and most economical way was to work them in pairs with a small pillar between the two, and a larger one between the pairs.

REPORT OF THE INTERNATIONAL COMMITTEE APPOINTED BY THE AMERICAN INSTITUTE OF MINING ENGINEERS ON THE NOMENCLATURE OF IRON AND STEEL.*

Whereas, The recent production of soft, cast, malleable compounds of iron by the Bessemer, the Siemens-Martin and the crucible steel processes appears to demand a new nomenclature of iron compounds, for the following reasons:

1st. The term "steel," by which these soft products are commercially and professionally designated in England and in the United States, does not completely distinguish them from previously existing "steel" which would harden and temper.

2d. A nomenclature recognized in all languages seems desirable, as well for commercial as for scientific purposes, especially as lawsuits, already commenced, depend on the meaning of the term "steel."

3d. Although homogeneity, due to fusion, is usually recognized and is by this committee recognized as the most definite characteristic of both hard and soft steel, this quality may be equally well expressed in other terms, thus leaving the old term, "steel," to define the malleable compounds of iron, which will harden and temper:

Therefore, resolved, That this committee recommend the following nomenclature:

I. That all malleable compounds of iron with its ordinary ingredients, which are aggregated from pasty masses, or from piles, or from any forms of iron not in a fluid state, and which will not sensibly harden and temper, and which generally resemble what is called "wrought iron," shall be called weld iron (German, *Schweisseisen*; French, *fer soude*).

II. That such compounds, when they will from any cause harden and temper, and which resemble what is now called "puddled steel," shall be called weld steel (German, *Schweiss-stahl*; French, *acier soude*).

III. That all compounds of iron with its ordinary ingredients, which have been cast from a fluid state into malleable masses, and which will not sensibly harden by being quenched in water, while at a red heat, shall be called ingot iron (German, *Flusseisen*; French, *fer fondu*).

IV. That all such compounds, when they will from any cause so harden, shall be called ingot steel (German, *Fluss-stahl*; French, *acier fondu*.

(Signed),

I. LOWTHIAN BELL,
P. TUNNER,
A. L. HOLLEY,
DR. HERMANN WEDDING,
RICHARD AKERMAN,
THOMAS EGGLESTON,
L. GRUNER.

In presenting the report, Mr. A. L. Holley remarked that at the last meeting of the Institute, upon the motion of Dr. Eggleston, and following the very interesting discussion upon the paper of Dr. Wedding on the nomenclature of iron and steel, a committee was appointed, of which the chair was one, to consider this whole subject of the nomenclature of iron and steel, and to reconcile the differences of opinion which existed in regard to this subject. This committee consisted of I. Lowthian Bell, England; Dr. Hermann Wedding, Germany; Peter Tunner, Austria; Richard Akerman, Sweden; L. Gruner, France; A. L. Holley and Thomas Eggleston, United States, and the report is as given.

* Read at the October Meeting.

Mr. William Metcalf, of Pittsburgh, followed Mr. Holley with a paper against the proposed nomenclature, or any change in the existing one. Mr. Metcalf said that although he had read the discussion on nomenclature with much interest, he had failed to observe that any steel maker or manufacturer had anything to say on the subject. Having had various conversations, more particularly with Mr. Holley, during the last summer, but also with other persons, members of the committee on the subject, of a nomenclature of iron and steel, I knew before hand what the substance of the report would be, and I thought it proper to present a protest of a steel manufacturer against this nomenclature. It is the object of this paper to oppose unnecessary changes, and the introduction of new and confusing terms.

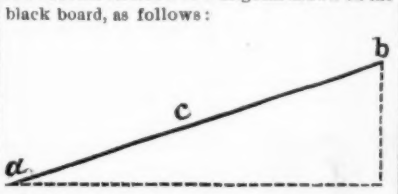
From the earliest times of which we have record of the subject iron has been divided into generic classes; whether iron was first known in the form of wrought iron or steel is of no importance. The earliest method of steel manufacture was from wrought iron by the process known as cementation. Steel was then properly defined as iron containing more carbon than wrought iron; cast iron, as containing more carbon than steel.

In the year 1776, when Huntsman began the manufacture of a new kind of iron by molding in molds, both definitions were all that could be desired. After this only to carbonized wrought iron melted in crucibles was given the name of cast steel. In 1855 the Bessemer process was introduced. This was followed by the Siemens-Martin process, and the products of both have ever since been called cast steel. I think at the present time we have three kinds of cast steel —the crucible, the Bessemer, the Siemens-Martin or open hearth.

German steel and shear steel are becoming rapidly a thing of the past. Such being the facts, an effort was made by those familiar with the subject to adapt to the word steel a definition better suited to present application. We have been told that the application of the word steel in this country embraces machinery steel, plate steel, open hearth steel, etc., and that they understand this thing better abroad. During the summer, as I have been thrown into contact with foreign gentlemen, I have taken occasion to observe carefully their use of the word steel, and I find that they speak of steel as we do, as machinery steel, tool steel, homogeneous steel, as if they knew no other names. There is no confusion of ideas in such uses of words.

The present nomenclature of steel is entirely understood between makers and users of steel. It has had a growth of more than a century, and not of a few years, and there is no impropriety in calling a specific kind of steel by a specific name.

In continuing the discussion on this subject, Mr. Metcalf referred to a diagram drawn on the black board, as follows:



I will consider first the most simple classes of cast iron and cast steel, and regard them with reference to carbon and iron only. In these various grades let the highest percentage of carbon known be represented by *b* at a given distance above the horizontal line, and the lowest percentage being at the other end of the horizontal line at point *a*. Or, more properly, let the point *a* represent the purest iron. Then the straight line *a b* will represent the differing amounts of carbon in iron. I propose to show that there is in some respects a continuity of properties from *b* to *a*, while in other respects the properties give different ones.

First, in reference to structure. Beginning at *b* iron containing the highest percentage of carbon, we have a very coarse, gray, brittle, lustrous structure. As we move toward *c* the luster grows dim until we have a dim, lusterless gray iron; further down we have a mottled surface, interspersed with white spots, which gradually increase in size as we move along, and finally it contains only a few giving the various grades of pig iron from gray through mottled to white. In this class of iron the difference in carbon of one-tenth of one per cent. can be observed with accuracy.

There is no exact point between cast iron and cast steel. Beginning at *c*, we have a bright, silvery luster, alternately light and dark, having very much the appearance of the grain of oak wood.

Mr. Metcalf described the various gradations in luster of steel so well known, but which he stated it would be difficult to describe in words, though the appearance of the different forms of iron under consideration is so marked that they would not be mistaken.

Specific gravity, hardness, density, strength, resistence to compression and resilience, and other properties of iron, were treated upon, and the diagram used to show the relations existing between cast iron and cast steel in these respects.

In answering the question, To what shall we attribute hardening? the various theories were examined, and in answer to the point that hardening is a characteristic of steel, the speaker said: If in the hardening of cast steel or cast iron there are definite points, and any one can tell us where it is, if told at this point we have hardening and below this no action, we will gladly agree that up to such a point we have iron, and below it steel, and over them cast iron.

Mr. Metcalf objected to any change in the names cast iron, wrought iron and steel, because they were old names and well understood, having been in use for over 100 years, and suggested that the names of Bessemer steel, Martin steel, and others which have become well defined, should be continued in use.

In the discussion following the reading of the report and Mr. Metcalf's paper, Dr. Raymond asked whether the proposed nomenclature included pig iron.

Mr. Metcalf: It does not go to that extent.

Dr. Raymond: Then, although "ingot steel" takes the place of what we call cast steel, "ingot iron" does not take the place of what we call cast iron?

Mr. Holley: Not at all, ingot iron only refers to crucible products.

Mr. Howe: We know that the properties imparted to iron by fusion are very important; but this nomenclature, while taking cognizance of these, leaves out of the question entirely the very important properties which carbon gives. Why should these be ignored? Why should not the committee give us a nomenclature that will express both the idea they have expressed in ingot iron containing properties which fusion gives, and at the same time those which carbon imparts? Why not express both of these ideas at the same time? Mr. Metcalf's argument that the property of hardening exists to a certain extent in all compounds of iron I do not see the force of. Many of our most important nomenclatures are based on the possession of important properties.

Mr. Holley: The gentleman who has spoken has presented some ingenious difficulties which he proposes to have remedied. I would emphasize *how* they are to be remedied by simply saying *Howe*.

Prof. W. P. Blake: The classification used at Creusot has found great favor in France. It seems to me that the adoption or promulgation of a commercial classification like that should receive some recognition or some mention in the discussion of the subject. I believe that the examination of that classification will show that they have found it necessary to favor the terms claimed by the gentleman who spoke last. I mention this to draw out some information in reference to that classification which my memory does not serve me sufficiently to give. But it interested me a year or two ago when I looked into it.

Dr. Raymond: I feel unprepared to meet a question brought before us so forcibly and concisely, and with such weight of authority, as the question brought to-night. It requires careful thought. I wish, therefore, to get it clearly before my own mind and that of the other gentlemen present interested in the subject, rather than to take any pronounced position on a subject where we are willing to be enlightened. I began by asking one or two questions. I wish to continue more in the same line. First, I understand the committee has given us a compromise report. The definition of steel, which was so ably advocated by Mr. Holley, which I think corresponds with the classification at Creusot—a definition which you all approve for its admirable conciseness—that definition this committee has not adopted, neither has it declared itself against any recognition of the newer light thrown upon the subject by later processes, and particularly of the high temperatures, the modern processes, which have enabled us to make wrought iron which had not been possible to any extent before; and therefore have given us an iron which is chemically like wrought iron—not like it structurally—I say they have not done one thing or the other, but they have made a compromise. A compromise in such cases as this, when there are two nomenclatures, and where there is a struggle for supremacy, has the effect of inducing the third, and then we will have three fighting. I state I take no ground on the subject. I do not feel competent to decide in a moment, when the thing has been presented in so concise a manner as in the paper. If all the gentlemen are ready to settle the question as to what is the characteristic quality of steel, and to say in their opinion it is homogeneity, I prefer to be silent. For these reasons the course I would advocate would be to postpone the adoption of that report, to receive it also in a manner not at all slighting to the gentlemen, but simply to add it to the records of the society and to hold on for a little while longer. However, I have one or two questions to ask. Mr. Holley tells us that the nomenclature does not go so far as to cover pig iron, therefore pig iron or cast iron remains where it was before. If I understand his answer to my second question, ingot steel is the same as cast steel. If that is the case, I respectfully protest against putting a new name to the same thing.

Mr. Howe: I think that Dr. Raymond has not stated the case fairly; as I understand it, ingot steel is not to be what Mr. Metcalf means by cast steel. There is a very important difference. It seems to me if any of these four expressions is used there can be no confusion. If you could perfect the nomenclature, the old expressions would be none less than before.

Dr. Raymond: In view of the meaning of the term ingot, Is there not considerable objection to using ingot iron while we have another called cast iron? I do not wish to get up here as champion of any opposition to this report. I want light upon it. I learn for the first time there is going to be a provision made for a new name for cast iron, and that certain products, which I now understand to include what is called structural steel, as Mr. Holley has heretofore called them, are now called ingot iron.

Mr. Holley: It does not belong in this nomenclature at all.

Mr. Raymond: The question is whether these names are well chosen. First, whether the distinctions are well taken; and, second, whether the names are happily chosen.

Mr. Holley: If it is a question of philology with Dr. Raymond we will give it up. I would rather not say anything more about this subject, because I have said too much already. I have been heard too much on the nomenclature of iron and steel, which is getting stale. I would like to say that iron and steel are perfectly well defined commercially. All the ingot products, all the products of fusion are called steel commonly, and are sold as steel; whether they contain ·05 per cent. of carbon, or whether 2¼ per cent. of carbon, they are called steel and sold as steel. We know the commercial nomenclature is bound to win in the long run. However, there have been some philosophical and scholastic objections to this nomenclature, chiefly started by my friend, Professor Eggleston, and backed up by Mr. Ackerman and Mr. Tunner. They propose to upset this American commercial nomenclature by something they have to offer. After all we have got to say there is some percentage of carbon in steel, and it is getting to be a commercial fact that people order steel as such a per cent. of carbon steel, and so much manganese and so much carbon, and steel is going to be defined by the percentages and those elements that enter into it. This is ignoring the views expressed before. Let us compromise it, if you wish to call it so, on what makes the nomenclature more international. Let us wait until the next Centennial before we have a final nomenclature of iron as it is.

Dr. Raymond: Mr. Holley knows probably as well as any member of the Institute my personal position in regard to this matter. What I am fighting for, he says, surrenders the whole ground, and does it to this compromise commission. So far as I know upon this subject, or thought upon it, I am heartily in favor of applying the term steel to all the products of the Bessemer process. The only points on which I have differed from Mr. Holley have been in regard to laying down the definition of steel. I do not wish confusion. The way to get along would be to add another word to steel making, a noun and the adjective. Mr. Holley would have no difficulty in using a noun and adjective if we can define exactly what we mean. Now, Mr. Holley tells us, and it is a notorious and ever growing fact, that the commercial nomenclature is going through, that the Bessemer product will be called steel, and the grade of the steel will be determined by the carbon it contains. The greater objection is this, if I understand the proposition made by this commission, the Bessemer manufacturer will be manufacturing in one heat one thing, and another in another heat. In one he will make iron, and in another steel, and if Mr. Holley, acting upon the report of the distinguished commission, makes ingot iron as a scientific man, as a manufacturer he will blow it all in the winds, and manufacture steel only.

Mr. Holley: I do not understand really why you say that, because in the Bessemer works we sometimes make iron and sometimes steel in successive heats.

Dr. Raymond: I do not see how I could so misunderstand as to suppose the Bessemer process is going to be changed as to the influence of this definition in pending lawsuits. I have only one word to say. It is a new point to me, but lawsuits are not to be settled by that definition.

Mr. Holley: Suppose we try to improve our nomenclature a little at a time, and not try to make it absolutely and theoretically perfect at once.

Prof. Eggleston: I would say the report was proposed, as it were, as a provisional report, and therefore a report not to be adopted at once. However, I did not rise to say that. I can remember the time when Bessemer steel was not so called. It was Bessemer iron. The terms that are proposed are for the English, the German and French, the same terms as used for a long time and accepted by the Germans and French portion of the Commission with a great deal of warmth, as Mr. Gruner expresses in his letter, and as the German members of the commission have also said in their letters and by word of mouth, they are no words that are new. We use words a little strange but not new, but if they appear a little strange at first we have the advantage of terms identical in three languages. When we use any one of those terms it will be an advantage. You will know what is meant if you use the translation of the word steel; it means one thing in German, another in French, and another in English. I would myself have been pleased if the English terms had been a little more English. In view of the fact that all the members of the committee speaking English agreed to this, and the terms are terms which can be translated into different languages, I think it would be a great advance. Now the great matter as I conceive in this is we have exactly representative terms in the different languages, and no vote of this Institute, or any other institute, is going to make these terms adopted if those using the terms, the scientific world, reject them. That I think is the only ground. The question is, Will the world at large, the different nations, adopt them? I think the question is going to be open to considerable discussion.

Mr. Gruner has held these views for a long time, and expressed them as being a great advance in scientific nomenclature, and just as soon as he is at liberty to do so, he intends to publish the report in full. The committee have made a great advance, even suppose you call it a compromise. So far as Mr. Holley is concerned it may be a compromise; with regard to the rest of the committee it is not a compromise.

The curious correspondence of railway progress in Europe and America may be illustrated by the following comparison. This includes, under the latter head, the whole of the railway systems of the North and South American countries. In 1855 the mileage of the European systems was 21,144, and of the American systems, 20,155. In 1860 they were respectively 32,031 and 33,589, America thus getting slightly in advance. In 1865, the civil war having retarded American progress, the European mileage was 46,606, and the American 38,845. But in 1870 they were respectively 64,448 and 58,477; and in 1875 America had further recovered the lost ground, for the railway mileage was only 88,007 against 83,910 miles of American rail. The American extensions during the last decade have been in fact greater than the European, the former amounting to 45,075 miles, and the latter to 41,311 miles.

Slag Paving Blocks.—The Birmingham *Post* says: There is now a possibility of the "Staffordshire oysters," as the scoriæ from blast furnaces are facetiously called in this district, being turned to profitable account. Mr. Joseph Woodward, of Bedale, Yorkshire, having patented an invention for making the scoriæ into blocks for road and footpath pavement, has put down a plant at Messrs. Turley's blast furnaces, the Factory, Tipton, in order to produce blocks for the purpose. The molten slag runs from the furnaces into molds, which are fixed upon a rotary frame, and as fast as one mold is filled another presents itself to the stream. The molds are opened whilst the blocks are red-hot, and placed in a kiln at a certain heat, and there they stay for 24 hours. This is all the process, and it requires two men and two boys to use up 30 tons of slag per day. When ready for use the blocks are very clean and hard. They turn a chisel, and the inventor claims for them that they are impervious to wet, and, consequently, to frost; the surface is level, but of such a nature that it bites the iron of the horses' shoes; the surface is chamfered, and so no horse could slip, whilst the chamfering, provided the street were laid upon a convenient gradient, would render the pavement a self-cleansing one. The blocks are made in five sizes in order to provide for different purposes, are cheap, and Mr. Woodward's effort to utilize the slag is the most successful which has been seen in South Staffordshire and East Worcestershire.

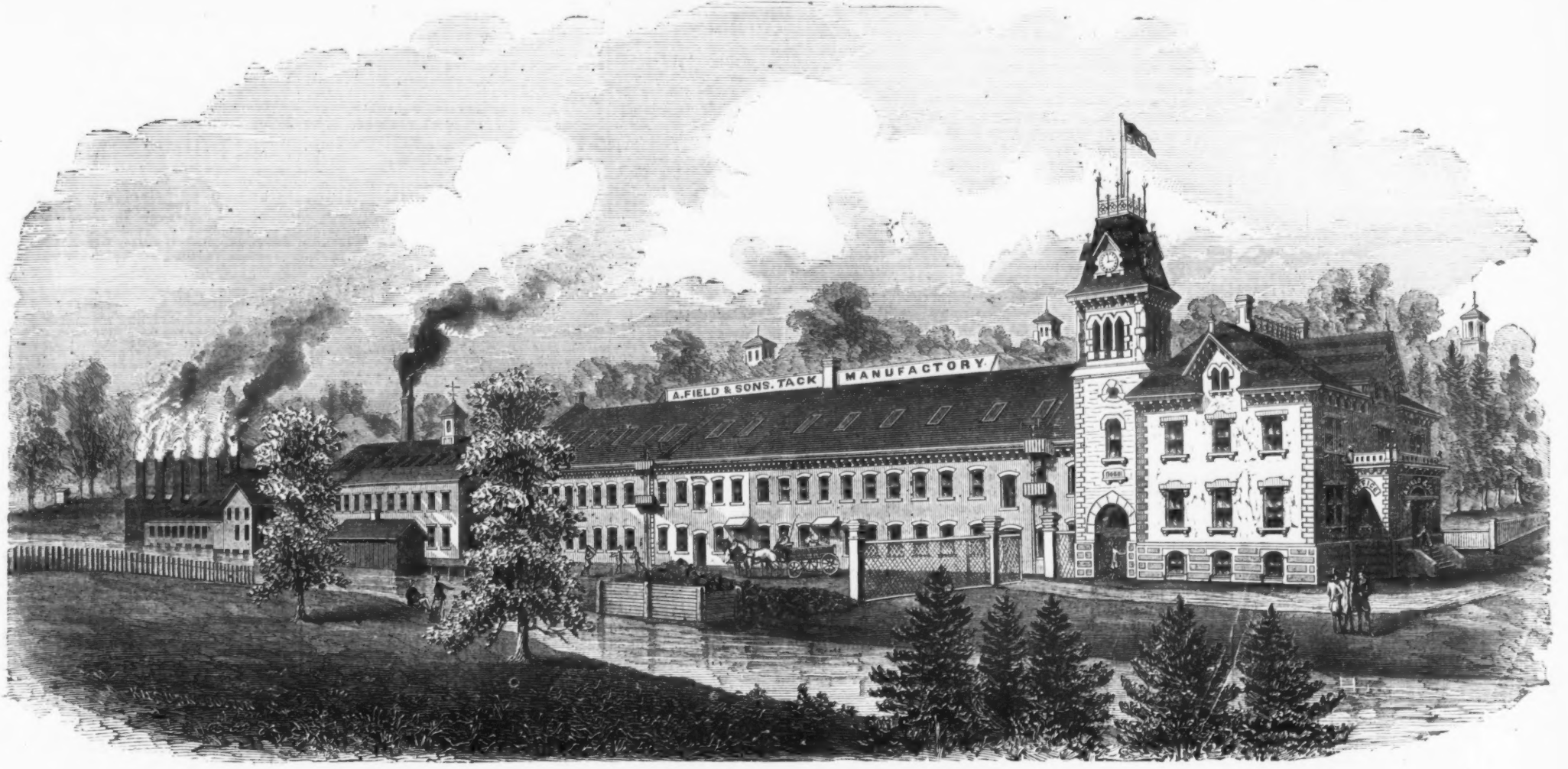
Preservation of Timbers.—Some observations have lately been made on German railways concerning the life of sleepers, which have a value outside of railway practice. It is found that of pine sleepers impregnated with chloride of zinc, after twenty-one years of service, the proportion that had been renewed was 31 per cent.; of beech sleepers impregnated with creosote, after twenty-two years, 46 per cent. had been renewed; of oak sleepers, not impregnated, after seventeen years, 49 per cent. had been renewed; of oak sleepers treated with chloride of zinc, at the expiration of seventeen years, 20·7 per cent. had been renewed. In all of these cases the conditions to which the wood had been exposed were very favorable, the road-bed being a very good one and permitting of excellent drainage. Test samples taken from sleepers that were allowed to remain at the expiration of the respective periods named, exhibited a perfectly sound cross-section. From another series of experiments made on a different road in the same country, extending over a shorter period of time, the following results were obtained: According to these observations the proportion of renewals was, with oak sleepers (not treated) after twelve years of service, 74·48 per cent.; with oak sleepers, treated with chloride of zinc, after seven years, 3·29 per cent.; with oak sleepers impregnated with creosote oil, after six years, 0·09 per cent.; with pine sleepers, impregnated with chloride of zinc, after seven years of service, 4·46 per cent. The practice of this road, since the year 1870, has been to employ only oak for sleepers, which are impregnated either with chloride of zinc or with creosote oil.

Straightening Shafting.—Mr. J. J. Hill, of Hayden's Ferry, Arizona, tells how to straighten shafts which have been warped by heat, or otherwise sprung. He says: "Lay the shaft on bearings at each end, with the arched side up, about one foot from the ground; then build a fire (wood will answer) under the part or parts to be straightened. When hot, chill the top side which is to be straightened with water, which can be best done with a swab; continue the heating and chilling till the work is complete. Allow the heat to come back to the top side between each chilling, to quicken the process and to ascertain when complete. After the shaft is hot, a very little fire will be required to continue the heat. I think that any kind or size of metal shafting can be straightened by this process. I made the experiment on a wrought iron shaft five inches in diameter and 12 feet long, that was sprung three inches by being burnt iff a mill. It was only two hours from the time I built the fire under it till it was perfectly straight.

Demidoff is said to be the richest man in Russia, and he is certainly more extensively engaged in industrial occupations than any other subject of the Czar. He owns the town of Nigetalisk, in the Ural, and his 13 establishments cover altogether an area of about 38,000 acres. It is more particularly with iron that Mr. Demidoff deals, but he finds also upon his property manganese, copper, lead, gold, diamonds, etc. At his iron works, Mr. Demidoff now produces iron in bars, plates, rails and steel to the aggregate extent of 27,000 tons per annum. The number of workmen employed by Mr. Demidoff is about 11,000.

It appears from recent explorations and surveys that the work of turning the Atlantic Ocean into the Great Desert of Africa is not so formidable an undertaking as was at first supposed. It is only necessary to cut a channel through a bar about 300 yards wide. The level of the desert immediately behind this obstruction is some 330 feet below the sea level, which will give a pretty fair depth of water over which to steam into the fertile heart of Africa.

ESTABLISHED .1827.



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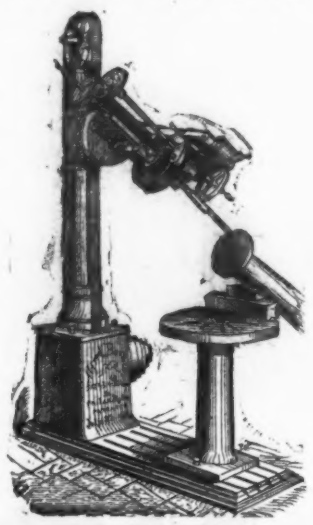
Warehouse and Salesroom at 78 Chambers Street, New York.

Alfred Box & Co.'s Patent Radial Drill Press.

This machine shown in the accompanying illustration is quite a novelty as compared with others of its class, and, judging from a thorough inspection and test of its operation, it seems to be well worthy of the attention of all users of such tools. The chief peculiarity consists in dispensing with the long shafts and bevel gears usually employed in the transmission of power from the driving cone to the spindle, and using instead a long belt, running directly upon a pulley on the spindle. In construction the machine is of the utmost simplicity, and is briefly as follows: The column and base plate are formed of one casting, the latter being planed perfectly square with the axis of the former, and furnished with T slots for the reception of clamp bolts. That portion of the column which is below the turned bearing for the radial arm is square, and contains the driving pulley, the shaft of which, passing through a long bearing, carries the cone upon the outer end. The internal pulley is furnished with Keller's patent coupling for connecting it to the shaft, which allows of its rotating freely with the two axes at the various angles caused by swinging the



radial arm. The latter is carried by a split sleeve upon the column, which is furnished with two through bolts which clamp it upon the column, holding it rigidly in any position in which it is adjusted. The vertical adjustment is by means of a rack and pinion operated by a worm and gear, the latter acting as a ratchet and preventing the possibility of the arm dropping when the holding bolts are loosed. Beside its radial adjustment the arm may be swiveled by means of a worm and gear, so as to allow of drilling upon any angle each side of the perpendicular, not exceeding 90°. This is obviously a great convenience, as it allows of drilling in the ends of long work, such as flanged pipe, shafts, &c., which would otherwise necessitate the use of a horizontal machine or the slow process of hand drilling. The swivel being accurately indexed may without difficulty be set at the required angle. The transverse of the head is by means of a screw having a detachable crank at end of the arm. The feed is of ample stroke, and arranged for hand only. The spindle is back geared and has all changes of speed and ample power, suitable for holes from 0 up to 6 inches diameter. The belt is led, by means of a series of idlers, from the internal pulley around that on the spindle over the top of the column and down again, so that the tension is not affected by the changes of position of the head or arm. By the use of this device the machine runs noiselessly on the fastest speed, and the manufacturers also claim a great reduction in running friction, and a consequent gain of power over the bevel gear method of transmission. A circular table having rotary and vertical adjustments (the latter by a device similar to that of the radial arm) is carried by a stand which is bolted in any required position upon the slotted base plate, and when drilling large work may be removed entirely. The machine is well built throughout, all sliding bearings being scraped, and the materials used being such as are best adapted to the purpose. The machine may be seen in operation in the shops of Messrs. Box & Co., Nos. 312 and 314 Green street, Philadelphia, Pa.

W. C. Allison & Co.

This firm having one of the largest manufacturing establishments in Philadelphia have enjoyed a large share of the business resulting from the Centennial, the aggregate being somewhat over $90,000. The establishment known as the "Junction Car Works and Flue Mill" covers under roof more than seven acres of ground, while the yard space for handling material, &c., amounts to as much more. This is exclusive of the finest wharf property on the Schuylkill River (the works being located about two squares from the latter), having a depth of water of about 20 feet on the front and in the side docks. A steam crane of about 50 tons capacity, and numerous railroad tracks connecting with the P. R. R., P. W. & B., and through them with all of the innumerable railroad lines centering in Philadelphia, render the facilities of the firm for unloading goods and material from vessels and loading them directly on the cars at one handling, for rail transportation unequaled in Philadelphia. To meet the requirements of this branch of their business the firm have for some years past owned a powerful switching locomotive, which is kept constantly employed about the establishment in shifting cars and trucks, loaded and unloaded. In order to meet the anticipated demand for transfer and transportation of goods and material for the Centennial, it was considered necessary to improve the wharf by dredging the docks, increasing the capacity of the steam-crane, laying additional tracks, &c., &c., all of which involved a heavy outlay, amounting to no less than $25,000. The result, however, as shown by the figures, indicates that this sum was well expended, the greatly improved facilities giving the firm entire control of all business in this line. All of the exhibits, material, &c., arriving at this port by water were transferred to rail, and a large proportion delivered at the grounds by them, thereby effecting a very material saving in time and expense. Among the heaviest of the articles handled were the ordnance exhibits of the United States and foreign governments, and the extensive display or Herr Krupp. Two of these guns, the 20 inch Rodman and the 14 inch Krupp rifle, although weighing over fifty tons each, were transferred from the vessels to their positions in the grounds without the slightest accident of any kind. The Prussian steamer Essen of 925 tons register and drawing 18 feet of water, was unloaded at this wharf, and at one time during the busiest period of the preparation no less than three vessels were discharging their cargoes at once, while several were lying in the stream awaiting their turn. The depth of water in the channel from the Delaware river to the wharf is 20 feet, and as all bridges below this point are either draw or pivot, there is no difficulty in bringing up full rigged vessels of the larger class. In addition to this branch, the business of the firm embraces a large variety, including all kinds of lap-welded tubes, flues and fittings, bolts, nuts, washers, rivets, &c., railroad, plumbers and gas fitters' tools and supplies, bridge and building iron work of every description. In addition to the above the extensive car shops, in the complete equipment of which no expense has been spared, enable them to turn out every description of railroad cars and iron work for the same (with the exception of passenger cars), as many as 400 cars per month having been finished and run out. The exhibit of the firm in Machinery Hall (Section B 24), a description of which was contained in *The Iron Age* of June 29th, although very extensive, necessarily leaves unrepresented several important branches of the business. The iron and wood work for the Centennial buildings and material furnished exhibitors amounted to about $70,000, the balance of the gross sum first mentioned being for unloading and transportation. Judging from the constant extensions and improvements going on about their works, Messrs. Allison & Co. would appear to secure a very fair proportion of the business doing, and the industry observable in almost every department could hardly be considered as suggestive of dull times.

Life of Steel Rails.

The government counsellor of Cologne gives the following statistics in regard to his experience with Bessemer steel rails. The most interesting of these we translate from the *Deutsche Industrie Zeitung;*

In the year 1864 an experimental strip was laid near Oberhausen, on the Cologne and Minden Railroad. In the last four years 1800 vehicles, on an average, have passed over each rail daily. After ten years wear the following percentage of rails have been renewed:

a.—Fine granular rails.....7·67 per cent.
b.—Cement rails.....63·3 "
c.—Puddled steel rails.....33·3 "
d.—Bessemer " ..... 3·4 "

On the whole road of the Cologne and Minden Company from the year 1866 to the end of the year 1875, 504,634 Bessemer steel rails were used, and in these eight years only 1625 rails were exchanged as useless, at which rate, taking the average age of these rails at two and a half years, the consumption was 0·322 per cent. of the rails laid down.

On the main line of the Cologne and Minden Railroad, which is used most, out of the 266,378 meters of iron rails laid there (⅛ fine grained and ⅛ fibrous iron) with an average age of 6·98 years, 6·75 per cent. were taken up and relaid, while on the same road out of 983,494 meters of Bessemer steel rails, with an average age of 3·8 years, only 0·2 per cent. had to be taken up.

These results are so extraordinarily favorable to the Bessemer steel rail, and appeared so soon after their first experimental use, that, so far as the Cologne and Minden Railroad Company were concerned, the question as to selection of material was decided years ago. They have used since 1867 about 8000 tons of iron rails and 69,500 tons of steel rails, but since 1872 no more iron rails have been put down at all, and the company have certainly made a great saving by this sudden change to Bessemer steel, although in the years when their principal purchases were made, the price of iron rails was to that of steel as 3 or 4, or as 4 to 5. At present when the price of iron and steel are about the same, when results like the above are at hand, when improvements are still being made in the manufacture of steel rails, and the fear of their breaking has been reduced by experience to its proper place, there can be less doubt about the choice.

A Tube Railway.—It is proposed to construct a railway between France and England which will be something of an engineering novelty. It will consist of two distinct tubes of cast iron, each carrying a line of rails, laid on the bed of the channel between Dover and Cape Grisnez, a distance of nearly 22 miles, the estimated cost being $5,000,000 per mile. The tube, which is elliptical in section, would be 4 inches thick, cast in 5 feet lengths, bolted together by internal flanges, lined inside with brick work laid in cement, and that again cased with five-eighth inch boiler plate; the outer dimensions 17 feet 8 inches diameter of the major axis, and 14 feet 8 inches the minor axis, the inner diameters being 15 and 12 feet respectively. The tube would be sunk in 25 feet lengths, and ingenious water tight bulk head being fixed at each end, with a central guide to bring them in juxtaposition for bolting when they are sunk—these bulk heads being removable from the inside, and would be sent on shore in a trolly as the tube progressed, to be used for a fresh section. The operation of sinking is proposed to be carried on from a floating pontoon 400 feet long by 100 wide, with a central opening 100 feet by 25, surrounded by staging for lowering each section.

Brazil has now about twenty-five hundred miles of railroad in operation, of either the 5 feet 3 inches, or the 39¾ inch guage, and the government is taking steps to increase the amount, having already decided to add some eleven hundred miles more. The equipments are very largely from American manufactories, and this now progressive empire affords an excellent field for the exercise of "Yankee" skill in the future.

Trade Report.

Office of The Iron Age,
Wednesday Evening, Nov. 1, 1876.

As is usually the case during the fortnight before election, the financial markets have been quiet, and but for the exciting war news from Europe they would have been utterly flat. The money market has worked easily, and call loans have been easily secured on pledge of good collateral, at 2 @ 4 per cent. The discount rate on prime commercial paper has been 4 @ 6 per cent.

The gold market has been fairly steady, advancing on the strength of foreign war news about three points. The following shows the daily range of the premium since our last report:

	Highest.	Lowest.
Thursday	109⅜	109¼
Friday	109⅞	109⅝
Saturday	109⅞	109¾
Monday	109⅜	109¾
Tuesday	110⅛	109⅞
Wednesday	110	109¾

Government bonds have been strong here and in London. This is the best answer which can be given to the reckless assertions of politicians who have dragged the credit of the government into the canvass, and are asserting that the confidence of investors in the value of United States bonds will be shaken or strengthened by the results of the election. Whatever the result the faith of the nation will not be broken, and even now when the political future is full of uncertainity our bonds are strong as in times of political quiet. We give below the quotations of governments at the close of business to-day.

The stock market has been somewhat irregular. On account of the unsatisfactory prices realized at the late coal auctions, coal stocks have again suffered a decline. The principal dealings were done in Western Union, Lake Shore, Michigan Central, D., L. and W., Pacific Mail, New Jersey Central and St. Paul. We give below the quotations of active shares at the close of business to-day.

The bank statement shows that notwithstanding large changes in the items of deposits, loans and specie, the change in the net result is unimportant, the surplus reserve being $10,983,400—only $68,800 less than last week. The following is a comparison of the averages for the past two weeks:

	Oct. 21.	Oct. 28.	Differences.
Loans	$261,968,700	$259,840,800	Dec. $2,127,900
Specie	17,616,600	15,947,200	Dec. 1,669,400
Legal tend's.	48,740,200	48,862,000	Inc. 121,800
Deposits	221,218,200	215,303,000	Dec. 5,915,200
Circulation	14,716,300	14,970,700	Inc. 254,400

The movements in foreign trade for the week are shown in the following tables:

IMPORTS.

For the week ended Oct. 28:

	1874.	1875.	1876.
Total for week	$4,770,530	$5,130,887	$2,901,027
Prev. reported	327,415,249	277,727,660	234,906,209
Since Jan. 1	$332,185,779	$282,858,547	$237,807,206

Among the imports of general merchandise were articles valued as follows:

	Quant.	Value.
Anvils	408	$4,469
Brass goods	13	1,342
Bismuth	2	782
Bronzes	19	3,609
Cutlery	36	10,555
Guns	17	3,401
Hardware	6	460
Iron, pig, tons	502	11,431
Iron cotton ties	187	581
Iron tubes	200	373
Iron, other, tons	59	17,213
Iron ore, tons	310	593
Lead ashes, casks	145	5,388
Metal goods	39	4,523
Needles	5	2,709
Nickel	2	1,054
Platina	1	1,224
Per. caps	25	5,828
Steel	938	12,617
Silverware	1	55
Tin, boxes	14,002	84,529
Tin, 200 slabs	13,730	2,041
Wire	1,093	8,838
Zinc	29,824	2,025

EXPORTS EXCLUSIVE OF SPECIE.

For the week ended Oct. 31:

	1874.	1875.	1876.
Total for week	$5,236,120	$5,893,917	$6,901,516
Prev. reported	240,395,478	206,168,442	218,734,448
Since Jan 1	$245,631,593	$212,062,359	$225,635,964

EXPORTS OF SPECIE.

For the week ended Oct. 28:

Total for the week	$724,130
Previously reported	40,761,074
Total since Jan. 1, 1876	$41,485,204
Same time in 1875	67,031,774
Same time in 1874	44,034,712
Same time in 1873	43,736,183
Same time in 1872	62,276,907

Government bonds at the close were quoted as follows:

	Bid.	Asked.
U. S. Currency 6s	124⅜	124⅝
U. S. 6s 1881, reg	117⅝	117⅞
U. S. 6s, 1881, cou	118⅜	118⅝
U. S. 5-20 1865, reg	110⅜	110⅝
*U. S. 5-20 1865, cou	110⅜	110⅝
U. S. 5-20 1865, new reg	113⅜	113⅝
U. S. 5-20 1865, cou	113⅜	113⅝
U. S. 5-20 1867, reg	116	116⅛
U. S. 5-20 1867, cou	116	116⅛
U. S. 5-20 1868, reg	117	117⅛
U. S. 5-20 1868, cou	117	117⅛
U. S. 10-40 reg	113⅞	114
U. S. 10-40 cou	115⅜	115⅝
U. S. 5s, 1881, reg	113	113⅛
U. S. 5s, 1881, cou	113	113⅛
U. S. 4½'s	111	111⅛

* Ex interest.

The following were the closing quotations of active shares:

	Bid.	Asked.
Atlantic & Pacific R. R. Preferred	2	—
Atlantic and Pacific Telegraph	15⅛	16⅛
Chicago & Northwestern	38	38⅛
" " Pref	59⅛	59⅜
Chicago, Rock Island and Pacific	101⅞	102
Chic., Bur. & Quincy	115⅛	115⅜
Col., Chic. & Ind. Cent.	4	4⅛
Clev., Col., Cin. and Indpls.	39⅛	41
Cleveland and Pittsburgh	90	90⅛
Chicago & Alton	99⅛	100
Chicago and Alton Preferred	107	—
Consolidation Coal	33	36
Canton	30	31
Del., Lack. and Western	74	74⅛
Delaware & Hudson Canal	72⅛	72⅜
Adams Express	108	110
American Express	60	60⅜
United States Express	59⅛	60
Wells, Fargo & Co. Express	85⅛	86
Erie	10⅛	11
Harlem	136⅛	137⅛
Hannibal & St. Joseph	14⅛	15
" " Pref	26⅛	27⅛
Illinois Central	82	82⅜
Kansas Pacific	1⅛	3⅛
Kansas & Texas	7	8
Lake Shore	57¾	57⅞
Michigan Central	46⅞	47⅛
Milwaukee & St. Paul	24⅞	25
" Pref	55⅛	55⅜
Mariposa	3⅜	5
" Pref	4½	7
New York Central	102	102⅛
New Jersey Central	36⅝	36¾
New Jersey Southern	1⅛	1⅜
Ohio & Mississippi	10⅞	11
Pacific Mail	24⅛	24¼
Panama	—	127
Pittsburgh & Fort Wayne	102	102⅛
Pacific of Missouri	4⅛	—
Quicksilver	12	14
" Pref	17	20
St. L., Kan. City Northern	5⅜	6
" " Pref	27	28
Tol., Wabash & Western	7⅝	7¾
Union Pacific	61	62⅜
Western Union Telegraph	71⅛	71⅜

GENERAL HARDWARE.

There is little if any change in the condition of the trade this week as compared with last. The attendance of buyers in the city is small, and a good many Western travelers have returned from their trips. From travelers still on the road we hear of fair orders being secured. The demand for Foreign Hardware is moderately active at unchanged figures.

Alfred Field & Co., No. 93 Chambers and 75 Reade streets have issued a circular offering the following named goods, which they are desirous of closing out. The prices quoted are very low, and the goods, which are all desirable standard brands, are worthy the attention of the trade:

Gold Prices.

Jno. Wilson's Steels, Metal Bolster.

No. 66, inch	10	12	14
Per doz	$10·15	12·08	14·50
Doz	25	25	33

Discount 33⅓ per cent.

John Wilson's Steels.

No. 65, inch	10	12
Per doz	$8·93	10·85
Doz	10	13

Discount 33⅓ per cent.

40 doz. Cow Ties, close Ring, with T's..00, $2·50 per doz.; 10 doz., 000, $3·45 per doz.—Discount 25 per cent.

30 doz. Cow Ties, close Ring, with Snap..00 $2·65 per doz.; 40 doz. 000 $3·45 per doz.—Dis. 25 per cent.

Walton Pattern Cow Ties, 25 doz., 4½x8x5, $2·75; 100 doz. 4½x8x4, $3; 15 doz., 4½x10x5, $2·85 per doz.—Dis. 33⅓ per cent.

50 doz. 4½x10x4, $3·10; 15 doz., 4½x10x3, $3·35; 10 doz., 5½x8x5, $3·15; 25 doz., 5½x8x3, $3·35 per doz.—Dis. 33⅓ per cent.

10 doz. 5½x10x2, $4·10; 50 doz., 5½x10x2, $4·25; 15 doz., 4½x8x3, $3·25 per doz.—Dis. 33⅓ per cent.

40 doz. Brade's London Trowels, 13 inch, $14; 15 doz., 14 inch, $15 per doz.—Dis. 30 per cent.

Boxwood Spokeshaves, Luther's Plain.

$9·00	10·00	12·00	9·00	12·00
2½	3	3½	Plated, 2½	3½

Discount 75 per cent.

125 gro. Pegging Awls, ordinary, assorted, large, $1·40 gro.; 125 gro. Brad, do., $1·85 per gro.—Dis. 25 per cent.

65 doz. Japan'd Padlocks, double chamber, double bitted, 2 keyed, No. 1011, 2½ inch, $1·75 per doz.—net.

Also other styles very cheap.

200 pair Half Traces, 3.10.2 each, Twisted, and Straight Rings	20c. pair.
200 pair Half Traces, 3.12.2 Twisted Rings	22c. "
1900 pair Twisted Stage Traces, Hooked T Clips and Rivets, 3½, 10, 2c	30c. "
400 pair Twisted Stage Traces, Hooked T Clips and Rivets, 3½, 12, 1c	33c. "
21 Genuine Wilkinson's Anvils, same as Wright's Patent; each Anvil warranted, assorted, 170, 171, 173, 174, 175, 187, 188, 194, 194, 194, 198, 202, 203, 204, 208, 211, 212, 217, 323, 326 330 lbs., at	8c. pr lb.
1550 lbs. Twisted Stay Chains, 5-16, Open Link. 1200 lbs. Close Link, at	6c. "
675 lbs Twisted Lock Chains, 5-16, Open Link. 600 lbs Close Link, at	6¼c."
40 dozen Butchers' Horse Rasps, 13 inch	$3·50 to £.

Cyclops Files.

Tapers.

Inch	3	3½	4½	5	6	7	8	10	12
Doz	20	61	17	18	27	3	27	7	3

Mill Bastard.

Inch	6	7	12	14
Doz	11	6	9½	21½

Flat Bastard.

Inch	4	4½	5	6	7	8	9	10	11	13	14	16
Doz	9	2	1	14	2	10	1	17½	½	4	8½	8½

Round Bastard.

Inch	4	5	6	8	10	12	14	16
Doz	12	6	16	16	12½	16½	8	1

Half Round Bastard.

Inch	6	8	10	11	13	14	16
Doz	10	7	14	4	4	8	2

Square Bastard.

Inch	6	8	10	12	14	16
Doz	4	20	10½	½	7	4½

Equaling Bastard.

Inch	12	14	16
Doz	4½	3	1

Hand Bastard.

Inch	8	10	12	14	16
Doz	5	4½	16	16	3

Flat Smooth.

Inch	4	5	6	7	8
Doz	9	1	6	4	9

Half Round, Smooth.

Inch	4	5	6	7	8	9	10	14
Doz	8	1	14	7	2	2	4	1½

Hand, Smooth.

Inch	8	10	12	14	16
Doz	5	14	11½	10	3

2d Cut Flat, inch	10		16
Doz	9½		4
2d Cut, ½ Round, inch	12		14
Doz	2		3½
2d Cut, Hand, inch	10	12	14
Doz	1½	1	1½
Shoe Rasps, inch	8		10
Doz	1		2½
Wood Rasps, inch	8		10
Doz	2		1
Cabinet Rasps, inch	10	12	14
Doz	½	1½	1½

15 doz., Horse Rasps, 14 inch.

These Files warranted as good as Butcher's, we offer at $3·50 to £.

The Nail market presents no new features and we continue to quote 10d. at $3·10 per keg net, with a discount of 10 cents per keg for lots of 100 kegs and over.

In our last issue we stated that The "Hart, Bliven and Mead Mfg. Co., have placed on the market a new Blind Staple, which will be known as Harvey's Improved Ratchet Thread Cone Pointed Blind Staple, &c." We should have said these goods are manufactured by H. A. Harvey & Co., New York, and are for sale by The Hart, Bliven & Mead Mfg. Co.

We invite the attention of the trade to the advertisement of Henry Disston & Sons on the 29th page. In our issue of June 15th we gave a description of the magnificent display of Saws, Tools, Files and Steel made by them at the Centennial Exhibition, and we are pleased to notice in the reports of the judges appointed by the United States Centennial Commission, their testimony to the high character of the goods shown by this house. In the advertisement, to which we have referred, the reports of the judges are given. It will be seen that Henry Disston & Sons were awarded a medal and diploma for each of the three groups under which their various manufactures were classed.

The manufacturers of Cabinet Locks have reduced the price of their goods by making a greater discount on some numbers, which we give below. There are no changes in list price, and the numbers not herein mentioned remain at 25 per cent. discount, as heretofore:

EAGLE LOCKS AT 50 AND 10 PER CENT. DISCOUNT.

Nos.	Keys.	List per doz.	Nos.	Keys.	List per doz.
5	12	$1·00	180	12	$1·56
5	6	·82	180	6	1·30
5	4	·74	180	4	1·24
5	3	·70	180	3	1·20
26	12	·84	185	12	1·50
26	6	·67	185	6	1·30
26	4	·61	185	4	1·24
26	3	·58	185	3	1·20
32	12	·95	187	12	1·40
47	12	1·87	187	6	1·20
47	6	1·72	187	4	1·14
47	4	1·64	187	3	1·10
47	3	1·60	220	12	1·80
48	12	1·12	220	6	1·60
48	6	·92	220	4	1·54
48	4	·87	220	3	1·50
48	3	·84	223	12	....
68	12	1·10	240	12	1·80
68	6	·94	240	6	1·60
68	4	·86	240	4	1·54
68	3	·82	240	3	1·50
72	12	·66	408	12	4·50
72	6	·50	409	12	6·50
72	4	·43	410	12	4·00
72	3	·40	411	12	....
76	12	1·50	415	12	1·50
77	12	2·00	416	12	2·00
98	12	·72	417	12	1·60
98	6	·55	418	12	2·25
98	4	·49	419	12	2·00
98	3	·46	420	12	3·00
116	12	1·25	500	12	1·87
138	12	·75	504	12	3·00
141	12	1·00	505	12	2·00
142	12	1·25	506	12	2·25
143	12	1·00	507	12	1·60
161	12	1·30	510	12	1·00
161	6	1·10	1000	12	....
161	4	1·03	1001	12	....
161	3	1·00	1005	12	....
174	12	2·25			

GAYLORD LOCKS AT 50 AND 10 PER CENT. DISCOUNT.

Nos.	Keys.	List per doz.	Nos.	Keys.	List per doz.
16	12	$6·50	200½	12	3·40
17	12	4·50	201	12	3·20
21	12	4·50	202	12	3·00
22	12	4·00	203	12	2·80
42	12	1·25	204	12	2·60
50	12	1·00	205	12	2·40
83	12	2·25	206	12	2·20
84	12	3·00	207	12	2·00
85	12	2·00	208	12	1·80
87½	12	1·87	209	12	1·70
93	12	2·25	210	12	1·60
94	12	1·60	211	12	...
95	12	2·00	219	12	1·80
96	12	1·50	219	6	1·66
98	12	2·00	219	4	1·54
100	12	1·00	219	3	1·50
113	12	1·62	220	12	1·50
169	12	1·12	220	6	1·30
169	6	·92	220	4	1·24
169	4	·87	220	3	1·20
169	3	·84	222	12	1·40
170	12	1·00	222	6	1·20
170	6	·82	222	4	1·14
170	4	·74	222	3	1·10
170	3	·70	223	12	1·50
182	12	·84	223	6	1·30
182	6	·67	223	4	1·24
182	4	·61	223	3	1·20
182	3	·58	224	12	1·30
183	12	·72	224	6	1·10
183	6	·55	224	4	1·03
183	4	·48	224	3	1·00
183	3	·46	369	12	1·00
187	12	1·10	379	12	...
187	6	·94	401	12	3·60
187	4	·86	402	12	2·90
187	3	·82	403	12	3·30
188	12	·66	404	12	2·60
188	6	·50	407	12	2·70
188	4	·43	408	12	2·00
188	3	·40	490	12	·72
197	12	·95	490	4	·49
198	12	·75	490	3	·46

Sargent & Co. have this day reduced the price of "Sargent's Patent Harness Snaps" from discount 50 and 10 to discount 60 and 10 per cent., prompt cash. The list prices for these goods are as follows:

Sargent's Patent Harness Snaps.

Japanned.

Nos	1	2	3	4
Size of Eye, inch	¾	⅞	15-16	1
Per gross	$7·00	7·25	8·00	8·75
Nos	5	6	7	8
Size of Eye, inch	1⅛	1½	1¾	2
Per gross	$11·00	13·00	15·50	25·00

Tinned.

Nos	11	12	13	14
Size of Eye, inch	¾	⅞	15-16	1
Per gross	$8·00	8·25	9·00	10·00
Nos	15	16	17	18
Size of Eye, inch	1⅛	1½	1¾	2
Per gross	$12·75	15·00	18·00	30·00

Round Eye.—Japanned.

No. 20, ⅞ inch Round Eye .... per gross, $12·00
No. 30, ⅝ " " " " 9·50

Tinned.

No. 120, ⅞ inch Round Eye .... per gross, $14·00
No. 130, ⅝ " " " " 11·00

Nos. 1 to 4 Japanned, and 11 to 14 Tinned, are packed 12 gross in a case. All other numbers, 6 gross in a case. No charge for cases when ordered in original packages.

Galvanized Harness Snaps.

Nos.	Per Gross.
201, ¾ in. Eye, as No. 1	$8·00
202, ⅞ in. Eye, as No. 2	8·25
203, 15-16 in. Eye, as No. 3	9·00
204, 1 in. Eye, as No. 4	10·00
205, 1⅛ in. Eye, as No. 5	12·75
206, 1½ in. Eye, as No. 6	15·00
207, 1¾ in. Eye, as No. 7	18·00
208, 2 in. Eye, as No. 8	30·00
220, ⅞ in. Round Eye, as No. 20	14·00
230, ⅝ in. Round Eye, as No. 30	11·00

The Lawrence Curry Comb Co., No. 382 Second avenue, have issued under date of 1st instant a revised price list for their goods. We print below the old and new lists. The discount remains as before:

Price List of the Perfect Comb.

Open Backs.

	Old List. Per doz.	New List. Per doz.
No. 20, 6 Bars, Iron Japanned	$1·65	$1·75
No. 120, 6 " Tinned	1·95	2·05
No. 220, 6 " Brass	2·45	2·55
No. 21, 8 " Iron Japanned	2·20	2·20
No. 121, 8 " Tinned	2·75	2·75
No. 221, 8 " Brass	3·85	3·85

Close Backs.

	Old List.	New List.
No. 30, 6 Bars, Iron Japanned	$1·80	$1·90
No. 130, 6 " Tinned	2·20	2·30
No. 230, 6 " Brass	3·00	3·10
No. 31, 7 " Iron Japanned	2·45	2·45
No. 131, 7 " Tinned	3·00	3·00
No. 231, 7 " Brass	4·40	4·40
No. 1, 5 " Iron Japanned	1·00	1·10

Patterson Brothers, No. 27 Park Row, have issued the following net price list for Barney & Berry's celebrated Skates for the season of 1876 and 1877:

Barney & Berry's Skates—Price List.

No. 1, New style Strap Skate, sizes from 7 to 12 inches	$1·00
No. 2, New York Club, Japanned Top, sizes from 7 to 12 inches	1·50
No. 3, Latest Style All Clamp, sizes from 7 to 12 inches	1·50
No. 4, Steel-Faced Blade, Blued Top, sizes from 7 to 12 inches	2·25
No. 5, All Clamped Steel-Faced Blade, Blued Top, sizes from 7 to 12 inches	3·00
No. 7, All Clamp Rink, Bright Finish, sizes from 7 to 12 inches	4·35

Heel Plates, per pair..10c. | Single Champs......10c.
Single Keys..........10c. | Single Clamp Screws.10c.

These goods are all securely boxed, cased, and delivered at depot free of charge.

We noticed last week the destruction by fire of Geo. Griffiths' factory. It will be seen by the following that little time has been lost in making arrangements for the re-establishment of the business:

Office of George Griffiths, Keystone Shovel, Spade and Coal Hod Manufactory,
511, 513, 515 Locust street.
Philadelphia, October 25th, 1876.

Gents: Owing to destruction of factory by fire, 21st instant, will be unable to fill orders for Shovels, Spades and Scoops for several weeks, but having secured another factory, all orders for Coal Hods, Stove Shovels, Pokers, Pans, Wash Boilers and Sheet Iron work, will be filled at once. Soliciting your orders, addressed to 515 Locust street, where we have office room.

I remain, yours, respectfully,
Geo. Griffiths.

Evans, Dalzell & Co., Pittsburgh, Pa., have opened a branch house in this city at No. 16 Cliff street. They will carry a stock of the goods of their own manufacture, including Iron Gas, Steam and Water Pipe, Boiler Flues and kindred goods, and, in addition, the goods of Lewis, Dalzell & Co., Vesuvius Iron Works, Pittsburgh, for whom they are agents. The latter house are manufacturers of Bar Iron, Nails, Boiler and Sheet Iron, Patent Dripping and Bread Pans, &c.

We invite attention to the advertisement of the Bailey Wringing Machine Co., No. 99 Chambers street, to be found on page 16. They devote their space this week to illustrations and descriptions of the Improved American Meat and Vegetable Choppers. We are informed that there is an increased demand for these goods this season, and the manufacturers have been behind their orders for some time. Over 400 of these Choppers have been ordered during the past two weeks for export.

The attention of the trade is requested to the advertisement of Owen & Campbell, of Philadelphia, on page 11. O. & C. are both practical Cutlers. They are making first-class goods, which, we are informed, are meeting with a favorable reception by the trade.

The Providence Tool Co. have issued a list of Iron Nuts and Washers of odd or irregular sizes and surplus stock on hand and for sale at their works in Providence, or by their agencies at Boston, New York and Chicago. They say: "The goods are all first-class as regards quality of iron and workmanship, &c., and could not be made to order at prices given." We print below the entire list. The prices quoted are net figures for any quantity, and are much below the regular market price for such goods. Henry B. Newhall, No. 11 Warren street, agent for the Providence Tool Co. in this city, will furnish samples on application:

Hexagon Nuts.

Width.	Thickness.	Hole.	No. of Pounds.	Price per lb., net. Cts.
5/16	1/8	1/8	26	20
3/8	1/8	1/8	36	15
3/8	3/16	7/32	146	
5/8	3/16	1/4	980	
3/4	7/16	7/16	50	10
3/4	1/2	3/8	168	
3/4	11/16	3/8	125	
7/8	1/4	11/32	64	8
7/8	7/16	1/2	138	
1	5/8	9/16	53	6
1 1/8	3/8	17/32	123	
1 1/8	5/8	19/32	60	
1 1/8	3/4	17/32	150	
1 1/8	3/4	9/16	216	
1 1/8	3/4	1/2	75	
1 1/8	3/4	19/32	50	
1 3/16	3/4	19/32	142	
1 1/4	1/2	7/16	55	5
1 1/4	1/2	1/2	69	
1 1/4	3/4	3/4	40	
1 1/4	7/8	1/2	430	
1 1/4	7/8	21/32	60	
1 1/4	7/8	19/32	200	
1 1/4	7/8	13/16	99	
1 3/8	5/8	11/16	100	
1 3/8	5/8	25/32	62	
1 3/8	3/4	11/16	188	
1 3/8	7/8	21/32	147	
1 3/8	1	3/4	130	
1 7/16	7/8	74/100	108	
1 7/16	15/16	21/32	218	
5/8	5/16	1/4	16	15
7/8	7/16	3/8	200	10
1 1/4	3/4	5/8	100	6½
1 3/8	3/4	1/2	108	
1 1/2	3/4	5/8	150	
1 1/2	5/8	3/4	200	6
1 1/2	3/8	11/16	56	4½
1 1/2	7/8	25/32	82	
1 1/2	1	3/4	100	
1 1/2	1	13/16	158	
1 1/2	1 1/4	5/8	135	
1 5/8	3/4	3/4	193	
1 5/8	7/8	3/4	70	
1 5/8	1	25/32	61	
1 5/8	1	13/16	130	
1 5/8	1	84/100	410	
1 5/8	1	7/8	120	
1 5/8	3/4	11/16	338	6
1 5/8	3/4	7/8	200	
1 3/4	3/4	25/32	140	
1 3/4	3/4	1/2	118	4½
1 3/4	7/8	1	172	
1 3/4	1	29/32	50	
1 3/4	1 1/16	15/16	215	
1 3/4	1 1/4	7/8	225	
1 13/16	1 1/8	95/100	118	
1 7/8	7/8	7/8	107	6
2	1	15/16	126	
2	3/4	1 1/16	150	4½
2	1 1/8	1 1/8	350	
2	1 5/16	1 1/32	205	
2	1 3/8	1	100	
2 1/8	1 3/8	1 1/16	160	5
2 3/16	1 5/16	1 1/32	215	
2 1/4	1	1	98	
2 1/4	1 1/8	31/32	559	
2 1/4	1 3/8	1 1/4	40	
2 1/4	1 1/2	1 1/4	150	
2 1/2	1 1/4	1 3/32	95	
2 1/2	1 1/4	1 5/8	236	
2 1/2	1 1/2	1 3/8	140	
2 1/2	1 1/2	1 1/4	150	6
3	1 1/2	1 3/8	150	7
3 1/2	1 1/2	1 11/16	500	5
3 1/2	2	1 1/2	154	7
3 1/2	1 7/8	1 1/2	154	

Chamfered and Trimmed.

Width.	Thickness.	Hole.	No. of lbs.	Price per lb. net. Cts.
1/2	1/4	7/32	115	23
1/2	1/4	7/32	770	20
9/16	7/32	7/32	251	18
5/8	1/4	1/4	190	
5/8	1/4	9/32	68	
5/8	5/16	9/32	202	
5/8	3/8	5/16	141	
5/8	5/16	9/32	325	17
3/4	1/4	1/4	84	16
3/4	1/4	13/32	53	
3/4	5/16	11/32	701	
3/4	3/8	11/32	113	
3/4	7/16	3/8	156	
3/4	11/16	3/8	125	
3/4	7/16	3/8	300	
7/8	7/16	13/32	380	11
7/8	1/2	11/32	80	
7/8	3/8	3/8	140	
7/8	1/2	3/8	30	
7/8	1/2	7/16	120	
1	1/2	5/16	228	9
1	3/8	3/8	120	
1	1/2	7/16	248	
1	5/8	7/16	169	
1	9/16	1/2	146	
1	1/2	15/32	20	
1 1/16	5/8	51/100	118	
1 1/8	5/8	15/32	200	
1 1/8	5/8	17/32	196	
1 1/8	5/8	13/32	118	
1 1/8	3/4	1/2	275	
1 1/4	3/4	9/16	180	7½
1 1/4	7/8	21/32	50	
1 3/8	3/4	5/8	125	
1 3/8	3/4	3/4	60	
1 7/16	1	11/16	300	
1 7/16	1	27/32	115	
1 1/2	7/8	5/8	400	
1 1/2	7/8	3/4	165	
1 1/2	7/8	11/16	150	
1 1/2	1	11/16	40	
1 1/2	1	27/32	90	
1 1/2	1	49/64	35	6
1 5/8	1	27/32	890	7
1 3/4	7/8	3/4	110	
1 3/4	1	7/8	240	
1 3/4	1 1/8	15/16	100	
1 3/4	1 1/8	7/8	25	6
1 13/16	1 1/8	95/100	43	7
2	1	1	140	7½
2	1 1/8	1	99	
2	1 1/4	1	174	
2 1/4	1 1/8	29/32	405	

Chamfered, Trimmed and Drilled.

Width.	Thickness.	Hole.	No. of lbs.	Price per lb. net. Cts.
5/8	3/8	1/4	15	14
5/8	1/2	3/8	14	
3/4	5/8	7/16	25	
3/4	7/16	3/8	354	
3/4	1/2	9/32	180	
7/8	7/16	13/32	98	12
7/8	1/2	40/100	125	
7/8	5/8	1/2	36	
1	1/2	7/16	136	10
1 7/16	7/8	74/100	70	8
1 1/2	3/4	21/32	275	
1 5/8	7/8	25/32	50	
1 5/8	15/16	3/4	70	
1 5/8	1	3/4	70	
1 3/4	1	7/8	45	
1 3/4	1	29/32	29	
1 13/16	1 1/8	95/100	656	
2	1 1/4	1	33	8½

Trimmed and Drilled.

1½ in. wide. 1 in. thick. ¾ in. hole. 1000 lbs. } 9 cts. per lb.

Chamfered on both Ends and Trimmed.

2¼ in. wide. ⅞ in. thick. 1 in. hole. 168 lbs. } 6 cts. per lb.

Hot Pressed Hexagon.

Width.	Thickness.	Hole.	No. of lbs.	Price per lb. net. Cts.
7/8	1/2	7/16	273	7
1	1/2	7/16	101	6
1 3/8	3/4	21/32	178	
1 1/2	3/4	11/16	173	

Square Nuts.

Width.	Thickness.	Hole.	No. of lbs.	Price per lb. net. Cts.
3/8	1/8	5/32	166	15
13/32	1/8	5/32	847	10
7/16	5/32	3/16	916	
1/2	3/16	1/4	219	
1/2	3/8	9/32	95	
9/16	1/8	3/16	351	8
9/16	3/16	1/4	132	12
5/8	1/4	5/16	115	7
3/4	1/8	7/32	76	5
3/4	1/4	9/32	70	
3/4	1/4	5/16	31	
7/8	5/16	7/16	200	4
7/8	5/16	15/32	96	
13/32	5/16	3/8	103	5
31/32	9/16	15/32	150	4
1	3/8	13/32	65	3½
1 1/8	1/2	15/32	200	
1 1/8	1/2	17/32	440	
1 1/8	3/4	13/32	85	
1 1/8	3/4	1/2	267	
1 1/8	1 1/8	1/2	125	
1 1/4	7/16	5/8	150	2¾
1 1/4	1/2	17/32	150	
1 1/4	1/2	19/32	335	
1 1/4	1/2	38/64	1600	
1 1/4	5/8	19/32	217	
1 1/4	5/8	5/8	59	
1 1/4	3/4	62/100	913	
1 1/4	3/4	21/32	155	
1 1/4	3/4	3/4	125	
1 3/8	5/8	21/32	112	
1 1/2	3/8	7/16	113	2½
1 1/2	3/8	11/16	106	
1 1/2	1/2	3/8	400	
1 1/2	1/2	7/16	400	
1 1/2	1/2	1/2	99	
1 1/2	1/2	17/32	292	
1 1/2	1/2	11/16	83	
1 1/2	1/2	7/8	94	
2 1/4	1 1/2	1 1/8	200	4
3	1 3/8	1 1/4	55	5
4	2	1 7/8	220	3
4	1 1/2	1	148	4

Chamfered and Trimmed.

Width.	Thickness.	Hole.	No. of lbs.	Price per lb. net. Cts.
19/32	5/16	21/100	199	10
11/16	3/8	30/100	30	
11/16	3/8	30/100	390	
3/4	3/8	11/32	226	8
3/4	7/16	3/8	99	7
7/8	3/8	13/32	117	
7/8	7/16	3/8	82	
7/8	7/16	7/16	29	
31/32	9/16	40/100	267	6
1	7/16	7/16	72	5
1	1/2	7/16	140	
1 1/16	5/8	51/100	300	
1 1/8	5/8	1/2	124	
1 1/8	5/8	17/32	200	
1 1/8	5/8	19/32	268	
1 1/4	5/8	17/32	75	4½
1 1/2	7/8	25/32	240	3½
1 3/4	1 1/8	7/8	112	
1 3/4	7/8	27/32	81	4
2 1/4	1 1/8	29/32	924	4½
2 1/4	1 3/8	1 1/4	40	5½

Chamfered, Trimmed and Drilled.

3/4	7/16	3/8	390	12
7/8	1/2	.40 100	83	9
7/8	1/2	7/16	390	
1	1/2	7/16	427	7
1 1/8	5/8	17/32	35	
1 1/8	5/8	9/16	720	
1 1/4	3/4	.62/100	280	6½
1 7/16	7/8	.74/100	600	
1 1/2	3/4	.21/32	492	
1 5/8	7/8	.25/32	197	6
1 5/8	1	.84/100	1185	
1 3/4	1	7/8	84	

Washers.

Width.	Thickness.	Number.	No. of lbs.	Price per lb. net. Cts.
3/8	3/32	15	130	15
1/2	5/32	18	170	12
7/8	1/4	12	123	6
7/8	3/8	3/16	155	
1 1/8	5/8	15	74	5
1 1/8	5/16	9	169	
1 1/4	9/16	19	29	
1 1/2	19/32	9	105	
1 1/2	5/8	4	128	-
1 3/4	1 1/8	10	319	4½
2 3/4	1 1/4	19	125	4

Lag Screws.

5/8x4	4½	5	5½	3 cts. per lb. net.
127	150	19	100 lbs.	

Bolt Ends.

1¼ inches. 351 lbs. 3½ cts. per lb.

BRITISH IRON MARKET.

(Specially reported by cable for The Iron Age.)

WEDNESDAY, Nov. 1, 1876.

Scotch Pig.—With weaker quotations a heavy demand has sprung up, and a large business has been done. The following are makers' quotations:

Gartsherrie No. 1	63/
Coltness No. 1	68/6
Glengarnock No. 1	63/6
Eglinton No. 1	57/

Manufactured Iron is quiet and steady, and a fair business is doing. Prices nominal.

Rails.—Quotations are nominal. There is a little better demand and a fair business doing.

IRON.

American Pig.—The tone of the market has changed considerably for the worse since the date of our last report, on account of the fact becoming known that the Allentown Iron Company have been selling quietly at $21 for No. 1 Foundry, while the other companies were getting $22. This has had less influence on the principal companies than might have been supposed, but it cannot be disguised that it has had a depressing effect on buyers generally. This reduction of price, together with the blowing in of furnaces that have been out of blast, is supposed to show that there is a profit in the article even at present low prices. The Thomas Company report the sale of 3000 tons Gray Forge and No. 2 Foundry, deliverable at Hoboken, at their option, at $30. The price of Allentown and Poughkeepsie is $21 for No. 1 Foundry. We quote Foundry No. 1, $21 @ $22; Foundry No. 2 and Gray Forge, $19 @ $20.

Scotch Pig.—The market here is more firm on account of the smallness of stocks, the advices from Glasgow, and a slightly increased demand here, incident to this season of the year. 150 tons Coltness, in bond, sold for export at a private price, and 200 Coltness, part at $28 and part at $28·50. We quote Coltness, $28·50; Glengarnock, $27 @ $28; Eglinton, $26 @ $26·50.

Rails.—The market continues without much change, and certainly without improvement. There are some inquiries, but late sales have reduced the views of buyers to a lower point than sellers are ready to concede. We quote Iron, $37 @ $40, and Steel, $50 @ $52.

Old Rails.—Without sales to note, we continue our quotation of $20 @ $21.

Scrap.—The stock of Wrought Scrap continues light, but without demand, the market being about as last week. We still quote $27 @ $28 as the nominal prices.

METALS.

Copper.—This metal has slightly receded during the week, and from 21c. has ranged down to 20½c., 400,000 pounds Lake Superior changing hands on the spot, closing at the inside figure. Nothing has transpired in futures. Baltimore may be quoted 21c., nominally. According to cable quotations received from London, Chili Bars had given way altogether 10/ from the highest previous point, closing at £76. 10/, while Best Selected had dropped £1, carrying this sort back to £83. English mail advices reach up to the 19th ultimo, and we extract therefrom the following passage: "Prices this week have been most irregular, different smelters' ideas of value being as much as £3 apart. Owing to the suddenness of advance, demand for the present is slack. The following are average rates asked: Tough Ingots, £82; Best Selected, £84; Sheets, £89." Much will depend henceforward on political affairs in the East. Opinions vary a good deal as regards the effect which actual war between Russia and Turkey would have on Copper and Tin; in England many intelligent metal merchants seem to incline to the belief that both these metals would improve, while most people here do not expect much change in either event. A general war in Europe could hardly do much good to any metal except Lead, but such a general war is by no means probable, even supposing that Russia resorted to this extreme argument to-morrow on her own account. No change has happened in manufactures, which we leave 31c. for Sheathing, and 32c. for Bolts and Braziers; Bronze and Yellow Metal Sheathing, 20¾c. @ 21c., and Yellow Metal Bolts, 26c. @ 28c., net cash.

Tin.—The stock of Straits and Malacca Tin in this market is considerably reduced, and in consequence thereof a tolerably firm feeling is noticeable, but the actual dealings have remained quite circumscribed. We quote at the close: Straits, 17⅜c. @ 17½c., gold; English Refined, 17½c.; do. Common, 17c., and Banca, 19½c., all gold, large lots. At London, from £75, Straits has given way to £74. 10/, as per cable dispatch of to-day. The telegram adds: "Deliveries in October satisfactory, being 2121 tons in England and Holland." These large deliveries rather speak in favor of the maintenance of prevailing rates, inasmuch as there may be some prospect now of reducing the London stock. We shall soon have the statistics of Nov. 1 by mail, when we shall be better able to form a judgment. English mail reports are to hand to the 19th ult., and from them we clip the following passage: "After advancing £2 on last week's figures, Tin has lost £1 of the advance, and now rules with a weak market. Ingots (L and F.), £78; Bar, £79; Grain Bars, in barrels, £84; Granulated, £86; and Straits, £73." *Tin Plates.*—The market here continues in the same flat condition, and we quote, gold, per box, large lines, ordinary brands: Charcoal Bright, $6·75 @ $7; ditto Ternes, $6·25 @ $6·50; Coke Tin, $6 @ $6·25; and ditto Ternes, $5·50. English advices per mail, dated 19th ult., are to the following effect from one source: "Some business has been done this week in Coke Tins, and nearly all the lots that were offering at bottom figures are now cleared off, and most of the needier makers filled up for the next two months. Other descriptions keep very dull, especially Charcoal Tins, for which there is little or no inquiry." From another source, a private letter, we obtain pretty much the same intelligence. It dwells with special emphasis on the same fact that the financially weak makers are now relieved of their stocks, and hence augurs well as regards the future, should there be the least *bona fide* revival in the general demand.

Lead.—Sales for the week have been confined to 100 tons Common Domestic on private terms. The quotation for actual business is 6⅛c., currency. There is no change in the feeling of apathy which has pervaded the market for some time past. Common Foreign we nominally quote, 6⅝c. @ 6¾c., gold. A sale of Soft Missouri is said to have been made at St. Louis at 5¾c., currency; freight to New York, 35c. The general tendency of the American markets is still a downward one. From England they write under date 19th ult.: "Lead has in the last few days become excited, owing to the more threatening reports from the East. Should the present floating rumors consolidate into reality, and a European war on a large scale ensue, prices must further advance. To-day holders are firm at £21. 5/, less 2½ per cent. on quay, for Spanish Pig; £21. 15/ for English Pig, and £23 for Sheet; these latter, as usual, free on board, less 2½ and 1 per cent." Manufactured continues in moderate request at 8¾c. for Bar; 9½c. for Pipe, and 10c. for Sheet, less the usual discount to the trade.

Spelter and Zinc.—Domestic Spelter from second hands has sold at 6⅝c., currency. The demand remains slack, and we nominally quote the metal 6⅝c. @ 6¾c., currency, as to quantity and brand. The combination at the West was broken up some time ago. Foreign is nominal at 7c., gold, nothing transpiring therein. There are no further reports from Europe, and the supposition is that there is no change there. *Sheet Zinc.*—The market is quiet at 8¼c. @ 8½c., gold, for Mosselmann, and 8¾c. @ 9c., currency, for American.

Antimony.—This metal varies a good deal in price, according to the brands and quantities wanted; the demand is not active at the decline. A brand like "Cookson" cannot be had under 14½c., gold. We quote the range of the market 14½c. @ 14¾c., gold. The "Cookson" brand had temporarily given way at London to £55, but cannot now be had below £56.

COAL.

The trade the present week presents the curious feature of Chestnut Coal selling at auction within a few cents of the price of Stove, and it will be noted as a feature of the November prices that Chestnut is quoted only 25 to 40 cents below Stove, an advance of about 30 cents per ton over the previous quotations. This is owing to the fact that the demand for Chestnut has very largely increased by reason of the introduction of base burning and other stoves using this particular size. The supply has not been increased to meet this unexpected demand, and the price has advanced accordingly. Stove Coal is also in fair demand, though the prices quoted for this month are in many instances a trifle lower than those of last month. Other sizes show a decline in the demand, although in most cases no alterations have been made in the quotations. The retail trade in this city is pretty well supplied, and we hear that in some sections of the country, where Coal cannot be obtained in the winter, stocks are pretty full.

We are indebted to Mr. F. E. Saward for the following table of the auction sales for September and October. It will be noted that no Lackawanna Chestnut was put up at either of the sales:

PITTSTON.

	Oct. 20.	Sept. 30.
15,500 tons Lump	$2·92½	$2·91¼
3,100 tons Steamer	2·95⅛	2·93⅛
20,600 tons Grate	2·93⅛	2·91
9,440 tons Egg	3·10	3·12½
41,900 tons Stove	3·85⅛	3·64
5,750 tons Chestnut	3·75⅛	3·30

SCRANTON.

	Oct. 25.	Sept. 27.
10,000 tons Steamer	2·96⅛	2·90⅛
25,000 tons Grate	2·82⅛	2·97⅛
20,000 tons Egg	2·92½	3·18⅛
40,000 tons Stove	3·85	3·96⅛
5,000 tons Chestnut	3·81¼	3·28

LACKAWANNA.

	Oct. 26.	Sept. 28.
5,000 tons Steamer	3·03	3·13
20,000 tons Grate	3·07	3·20
25,000 tons Egg	3·00	3·28⅛
90,000 tons Stove	4·04	4·10

PRICES FOR NOVEMBER.

	Lump.	Steamer.	Broken.	Egg.	Stove.	Chestnut.
PENNSYLVANIA COAL CO., at New York, 65 cents per ton additional.						
Pittston	3·10	3·10	3·25	3·35	4·10	3·60
DELAWARE AND HUDSON CANAL CO., at Weehawken, N. J.†						
Lackawanna	3·03	3·07	3·00	4·04		
LEHIGH AND WILKES-BARRE COAL CO., f.o.b. at Port Johnson, N. J.						
Old Company's Summit	4·00		3·60	3·60	4·00	3·60
Honey-Brook Lehigh	4·00		3·60	3·60	4·00	3·60
Wilkes-Barre	3·25	3·25	3·50	3·50	4·25	3·60
Plymouth Red Ash			3·50	3·50	4·30	3·60
PHILADELPHIA AND READING COAL AND IRON CO. at Port Richmond, Philadelphia.						
Hard White Ash Coal	3·20	3·20	3·20	3·20	3·70	3·45
Free Burning White Ash Coal			3·20	3·20	3·70	3·45
Schuylkill Red Ash				3·30	3·80	3·20
Lorberry			4·20	4·20	4·20	3·25
Lykens Valley			4·70	4·70	4·70	3·70
DELAWARE, LACKAWANNA AND WESTERN, at Hoboken, N. J.*						
Scranton	2·96½	3·82½	2·89¼	3·85	3·81¼	
FREDERICK A. POTTS, 110 Broadway, New York.—Port Johnson, Elizabethport and Hoboken.						
L. & W. C. Co.'s Wilkes-Barre	3·25	3·25	3·50	3·50	4·25	3·50
L. & W. C. Co.'s, Old Co. Lehigh	4·00		3·60	3·60	4·00	3·30
L. & W. C. Co.'s, Plymouth Red Ash			3·60	3·60	4·35	3·50
L. & W. C. Co.'s, Honey-brook Lehigh	4·00		3·60	3·60	4·00	3·30
Scranton	3·15	3·15	3·25	3·25	4·15	3·75
WHITNEY, M'CREARY & KEMMERER, 111 Broadway, New York.—John White, Sales Agent.—F.o.b. at Elizabethport or South Amboy.						
Upper Lehigh and Council Ridge	4·00		3·60	3·60	4·25	3·50
Everhardt Wyoming				3·50	4·25	3·50
Wilkes-Barre			3·50	3·50	4·25	3·50
Shamokin					4·25	3·50
East Spring Mountain Lehigh	4·00		3·60	3·60	4·00	3·30
A. S. SWORDS, 111 Broadway.—Coal at Newburgh.						
Pittston Coal	3·10	3·10	3·20	3·30	4·10	
MEEKER & DEAN, 111 Broadway.						
Lackawanna Valley	3·25	3·25	3·25	3·40	4·10	3·75
Kingston, Wy'm'g White Ash	3·25	3·25	3·25	3·40	4·10	3·75
Chauncey Wyoming Red Ash				3·60	4·25	3·75
Wilkesbarre	3·25	3·25	3·25	3·40	4·10	3·75
Beaver Brook Lehigh	4·00		3·60	3·60	4·00	3·60
Cross Creek Lehigh, at Elizabethport, N. J.			3·60	3·60	4·25	3·60

*Auction prices of October 25.
†Auction prices of October 26.

We quote Bituminous Coal as follows:

Cumberland, at Georgetown	$3·50 @ $
West Virginia, at Baltimore	4·50 @ 6·00
Kittaning f. o. b., Baltimore	4·25 @ 4·35
Newburg Orrel, at "	@ 4·50
Despard, at Baltimore	@ 4·50
Broad Top, at South Amboy	@ 4·75
Morrisdale, Wigtons	@ 4·75
Cunard	@ 4·75
" at Philadelphia	@ 3·90
Consolidation Coal Co. f. o. b., Georgetown	@ 3·50
Consolidation Coal Co. f. o. b., Baltimore	@ 3·65
In barges at New York	@ 5·50
Maryland Coal Co. f. o. b., Baltimore	@ 4·00
Maryland Coal Co. f. o. b., Georgetown	@ 3·75

RATES OF FREIGHT FROM RONDOUT ON "LACKAWANNA COAL," BY BOATS AND BARGES OF THE DELAWARE AND HUDSON CANAL COMPANY.

Per ton of 2240 lbs.

Troy and West Troy	60c
" " if discharged above the bridge or locks, or at R. R. docks	65c
Albany and Greenbush	60c
Coeyman's	65c
Stuyvesant	60c
Coxsackie	55c
Hudson	45c
Hudson and Boston R. R. Dock, discharged to cars	55c
Catskill	55c
Germantown	55c
Saugerties	45c
Barrytown	45c
Rhinebeck	35c
Poughkeepsie and New Paltz Landing	35c
Fishkill Landing and Newburgh	25c
Cold Spring and West Point	25c
Peekskill	45c
Haverstraw	45c
Nyack	50c
Sing Sing and Croton Landing	55c
Tarrytown	55c
Piermont	55c
Yonkers	55c

FREIGHTS—PER TON OF 2240 LBS.

Ports.	From Elizabethport, Port Johnson, South Amboy, Hoboken & Weehawk'n.	From Philadelphia.	From Baltimore.	From Georgetown.
Augusta, Me	....	....	$1·75	....
Albany	....	....	....	....
Amesbury, Mass	....	....	....	....
Bangor, Me	$1·25	....	2·00	....
Bath, Me	1·00	....	2·25	2·25
Baltimore	....	....	....	....
Boston, Mass	1·50	1·30	2·00	2·00
Bridgeport, Ct	·75	·95†	1·80	1·80
Bristol, R. I	1·10	....	....	....
Cambridgep't, Mass	1·00	....	....	....
Derby	....	....	....	....
Dighton	....	....	1·90	1·90
East Cambridge	*1·50	....	....	....
Fall River	1·10	1·25	1·85	1·85
Hackensack	....	....	....	....
Hallowell, Me	....	....	....	....
Hartford	....	....	....	....
Hoboken	·45	....	1·40	1·40
Hudson	....	....	1·80	1·80
Jersey City	·40	....	1·40	1·40
Lynn, Mass	1·55	....	....	....
Middletown	·90	....	....	....
Mystic	....	....	....	....
Newark	....	....	1·50	....
New Bedford	·85	....	1·40	1·85
Newburyport	1·60	....	1·65	2·10
New Haven	·85	....	1·80	1·80
New London	1·00	....	1·85	1·85
Newport	·85	....	....	....
New York	·45	·70	1·50	1·50
Norwalk	·85	....	1·40	....
Norwich	·90	....	1·95	1·95
Pawtucket	1·20	....	....	....
Philadelphia	....	....	·90	....
Portland	·90	....	1·45	2·15
Portsmouth, N. H	1·60	....	1·60	2·25
Providence	1·10	1·25	1·85	1·85
Poughkeepsie, N. Y.	....	....	....	1·40
Rockland	1·40	....	....	....
Rockport	....	....	....	....
Saco	....	....	....	....
Sag Harbor	1·00	....	....	....
Salem, Mass	1·00	....	2·10	2·10
Salisbury Pt., Mass	....	....	....	....
Stamford	·85	....	....	....
Saybrook	1·00	....	....	....
Stonington	1·00	....	....	....
Taunton	....	....	....	....
Troy	·85	....	....	....
Warren, R. I	1·10	....	....	....
Wareham	....	....	2·10	2·10
Weymouth	....	....	....	1·65
Wilmington, N. C	....	....	....	1·25

* 3c. per bridge extra. † And Sound Towing.
Harbor Freights, 40 cents.

OLD METALS, PAPER STOCK, &c.

We have no perceptible change to report in the condition of the Old Metal market since last week. Stove Plate continues in good demand, and Machinery Iron is selling at $14 per ton, which is somewhat higher than last week's quotations. The Rag market still continues dull. Book and Newspaper Stock are in good demand, and are firm at quoted rates. We quote the following as the current purchasing prices:

Old Metals.—Copper, 14c. @ 15c. per lb.; Yellow Metal, 10c.; Brass, 9c. @ 9½c.; Composition, heavy, 11c. @ 12c.; Lead, solid, 5c.; Tea Lead, 4c.; Zinc, 4c.; Pewter, No. 1, 12c.; do., No. 2, 8c.: Spelter, 5½c., Wrought Iron, $21 per ton; Light do., $9 per ton; Stove Plate, $9 per ton; Machinery, do., $11 per ton; Burnt Iron, $4 per ton.

Rags, &c.—Canvas, Linen, 4½c. @ 5½c.; do. Cotton, No 1, 5¾c.; No. 2, 2¼c.; White, No. 1, 5c.; No. 2, 4c.; Colored, do., 2c.; Mixed, Woolen, 2c. @ 3c.; Soft, do., 5c.; Gunny Bagging, 1¾c.; Jute Butts, 1¾c. @ 2c.; Kentucky Bagging, 3c.; Book Stock, 3½c.; Newspaper Stock, 2½c.; Waste Paper and Scraps, 1½c.; Kentucky Bale Rope, 4c.; Oakum Junk, No. 1, 4½ @ 5c.; do. No. 2, 3c.; Tarred Shaking, 1c. @ 1½c.; Grass Rope, 3c.

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending October 31, 1876:

Hardware.

Boker Hermann & Co.
Mdse. pkgs., 8
Cutlery, cs., 3
Degraw, Aymar & Co.
Chains, 9
Chains, cks., 9
Hammacher A. & Co.
Ironware, cs., 22
Hildick A. H.
Mdse. pkgs., 3
Laughland & Co.
Wire, bdls., 281
Wire, cks., 3
Wire, rolls, 22
Peters Bros.
Mdse. pkgs., 5
Quackenbush, Townsend & Co.
Casks, 3
Russell & Erwin Mfg. Co.
Mdse. pkgs., 1
Schoverling & Daly,
Mdse. pkgs., 3
Arms, cs., 2
Spies, Kissam & Co.
Guns, cs., 4
Cases, 1
Van Wart & McCoy,
Mdse. pkgs., 9
Packages, 8
Wiebusch & Hilger Hwd. Co.
Cutlery & hardware, pkgs., 37
Ward Asline,
Mdse., pkgs., 7
Order.
Anvils, 20
Chains, cks., 8
Casks, 3
Cases, 32
Files, cks., 1
Wire, pkgs., 5
Nails, cs., 2

Iron.

Frith Edward,
Bars, 5114
Henry A. T.
Pig, tons, 100
Henderson Bros.
Mdse. pkgs., 62
Marvel U. D.
Ore, tons, 200
Mitander Nils,
Bars, 872
Naylor & Co.
Bars, 3349
Perkins, Livingstone & Post,
Tons, 50
Sampson G. G.
Pig, tons, 100
Order,
Scrap, tons, 17
Bars, 1850

Steel.

Colby J. L.
Cast rods, 129
Naylor & Co.
Axles, cs., 20
Tires, cast, 32
Scrap, spring, tons, 73
Prosser Thos. & Sons,
Mdse., pkgs., 57
Robbins C. & Son,
Bundles, 374
Wire rods, bdls., 120
Sulzbacher, Hyman & Wolffe,
Cases, 6
Woodford W. O.
Cases, 19
Order.
Rods, bdls., 138
Bundles, 683
Cases, 22
Bars, 350
Scrap, spring, tons, 57¾

Metals.

Arango A.
Copper, bales, 2
Bruce & Cook,
Tin plates, bxs., 400
Byrne Joseph & Co.
Tin, ingots, 280
Cort N. L. & Co.
Tin plates, bxs., 550
Drexel, Morgan & Co.
Lead, pigs, 3661
Mariner H. & Ward,
Tin-foil, cs., 5
Naylor & Co.
Tin plates, bxs., 1320
Phelps, Dodge & Co.
Tin, bbls., 39
Tin plates, bxs., 5478
Robbins C. & Sons,
Black taggers, bxs., 50
Saurel & Marneffe,
Tin, sheets, cs., 1
Windmuller L. & Roelker
Sheet zinc, cks., 12
Wheeler E. S. & Co.
Tin plates, bxs., 700
Order,
Tin plates, bxs., 9904
Tin, slabs, 360
Tin, bars, 126
Tin, ingots, 700
Tin, bbls., 5
Speiter, plates, 1952
Tin, bxs., 2500
Without Bill of Lading,
Tin plates, bxs., 607

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending October 31, 1876:

	Quan.	Value.
Hamburg.		
Nails, bxs	5	154
Ag. imp., cs	9	770
Mach'y, cs	19	2,890
Hardware	29	983
Bremen.		
Hardware, cs.	26	800
Pumps, cs	8	740
Em. clo. bdls.	31	290
Pistols, cs	1	150
Copper, cks	18	4,500
Ag. imp., pkgs	20	1,001
Mf. iron, pkgs.	4	115
Sand p'r, pkgs	21	183
Rotterdam.		
Mf. iron, pkgs.	90	469
Pumps, pkgs.	28	2,290
Hardware, cs.	26	470
Sand p'r, bdls.	51	366
Mach'y, cs	27	1,075
Antwerp.		
Castings, bbls	4	140
Copper, cks	45	11,250
Rifles, cs	1	386
Liverpool.		
Machinery, cs.	6	384
Tinware, cs	7	180
Hardware, cs.	19	723
Metal gds, cs.	2	400
Wringers, cs.	12	320
Pistols, cs	3	910
Metal gds., cs.	2	350
London.		
Hdw., pkgs	156	4,066
Spelter, slabs	7,266	25,000
Mach'y, pkgs.	42	1,856
Ag. imp., pkgs	303	1,230
Pumps, pkgs.	3	200
Needles, cs	1	1,474
Skates, cs	2	231
Guns, cs	117	5,302
Hull.		
Hardware, cs.	39	1,319
Mach'y, bxs	42	2,544
Glasgow.		
Needles, cs	2	5,884
R.R. cars, pkgs	5	2,800
Machinery, cs.	25	3,100
British North American Colonies.		
Tel. mtls, pkgs	21	940
Mf. iron, pkgs.	11	175
Hdw., pkgs	38	880
British West Indies.		
Mach'y., pkgs.	2	428
Pumps, pkgs.	2	90
Hdw., pkgs	11	210
Nails, kegs	25	102
Truss hoops, bdls	16	199
Lamps, pkgs.	5	180
British Honduras.		
Nails, kegs	20	62
Hardware, cs.	21	505
British Australia.		
Hwd., pkgs	329	9,064
Cutlery, cs	5	211
Pumps, pkgs.	6	175
Ag. imp., pkgs	9	440
Nails, kegs	225	804
Mach'y, pkgs.	12	275
Rifles, case	1	210
New Zealand.		
Hardware, cs.	148	3,908
Nails, kegs	59	225
Ag. imp., pkgs	44	900
Cutlery, pkgs.	304	5,100
Wringers, cs.	11	330
Pumps, pkgs.	7	344
Havre.		
Mach'y, pkgs.	8	2,334
Ag. imp., cs.	33	2,968
Copper, cks	220	65,000
Porto Rico.		
Fire engine	1	180
Nails, kegs	50	161
Ag. imp., pkgs	5	116
Hdw., pkgs	39	919
Iron safe	1	288
Cuba.		
Ag. imp., pkgs	22	860
Bells, case	1	150
Tacks, cs	4	165
Mf. iron, pkgs.	29	444
Car whls., prs.	34	244
Tel. matl., cs.	3	408
Axles	24	600
Hdw., pkgs	200	5,162
Nails, kegs	136	579
Iron, pkgs	206	553
Africa.		
Nails, kegs	2	20
China.		
Nails, kegs	100	320
Scales, cs	27	689
Ag. imp., pkgs	13	144
Venezuela.		
Hdw., pkgs	33	896
Mf. iron, pkgs.	152	2,582
Mach'y, bxs	4	391
Cutlery, cs	18	544
Pistols, case	1	106
Brazil.		
Hdw., cs	101	1,879
Cutlery, bxs	24	1,447
Ag. imp., pkgs	127	1,658
Pig iron, tons	25	2 060
Irons, cs	167	1,178
Car matl., pgs.	26	2,008
Argentine Republic.		
Ag. imp., pkgs	123	2,762
R. R. matls, pkgs	7	329
Hdw., pkgs	37	1,182
Pistols, case	1	34

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Nov. 1, 1876.

The Iron trade is without material change; at any rate, there is nothing encouraging to report in regard to the immediate outlook, and, as we have remarked before, we can see no reason to expect any change until after the new year. There is still a good deal of talk about an increase of furnaces in blast, but there is very little foundation for such reports, the only addition this week being the Uhler Furnace, South Easton, Pa. (Fowler & Co., lessees.) The Lehigh Valley and the Lehigh Iron Company have each one ready to put in blast. The Crane Iron Company have three in blast (one on Bessemer). The Thomas Company have six in blast; the Allentown none, and all these companies say they expect to remain as at present unless there is a decided change in prospects.

The Hardware trade has been fairly active during the week, and a generally satisfactory feeling seems to prevail. In fact, business is better than was anticipated, and the average of this month will be considerably better than the corresponding month of last year. Remittances are rather slow, however, and it is feared they will continue so, owing to the fact that large sums have been spent in visiting the Centennial, which ought to have gone to reduce indebtedness at the store. The trade in agricultural implements has been very active, and orders have been filled for shipment to every part of the globe. This branch of business, in manufactures for export, is firmly established, and has already grown to large proportions. We are also informed of a sale made a day or two ago by Potter & Hoffman of a large quantity of railway construction tools for shipment to South America.

The narrow gauge railway from Camden to Atlantic City, called the Philadelphia and Atlantic City Narrow Gauge Railway, is to be commenced immediately, and it is expected will be finished by July 1, next. The length of the road will be 55 miles. About 5 miles across a swamp will be laid with Iron Rails, the balance with Steel Rails. Some delay has been caused by opposition from the Camden authorities, who oppose the right of way through the city to the Delaware River. The intention is to have the terminus at the wharf of the American Dredging Company.

In this connection, we may mention that the establishment of a new line of steamships hence to Liverpool is now an accomplished fact. It is true they will sail under the British flag, but the advantage to the city will be none the less on that account. A little wholesome competition is needed, and there is business enough and to spare for all the lines. The first steamer to sail will be the Dominion, on the 5th December, to be followed fortnightly by the Ontario and Quebec. The vessels are in every respect A 1, each 3200 tons register, and have hitherto been engaged in the Canadian trade.

Some excitement has been caused by the arrival of the schooner Era from Cumberland Harbor *via* St. Johns, N. F. She is said to have brought a cargo of mica and graphites of immense value, but it will be best to wait further developments before accepting the reports as authentic. Meantime, the value is stated at from $1,500,000 to $2,000,000, but a considerable amount of mystery surrounds the whole transaction.

The number of paying visitors to the Centennial during last week amounted to 570,000, and for the month considerably in excess of 2,000,000, and it is safe to say that from September 1st to November 10th, at least 5,000,000 persons will have paid a fee for admission to the grounds, a number far in excess of the attendance at any previous exhibition, although the cost of admission is greater, and the population more sparse than in Europe.

Pig Iron.—The demand is fair, but not active, while there is a trifle more pressure to sell, and prices in consequence are a shade weaker without being quotably lower. One or two furnaces have recently been blown in, and their agents, in trying to find purchasers for the product, come in competition with those who have been constantly in the market, and in most cases the result has been cutting in prices. Some parties are also influenced by their fears in regard to the result of the election, and though we do not see why that, in any event, should cause a decline in prices, it is a fact that some regard a change of administration with a good deal of apprehension, and accept offers, which, under other circumstances, would be refused. Taking everything into consideration the market may be said to be somewhat unsettled, and prices scarcely so strong as last week. Sales are chiefly at quotations herewith, but concessions have been made in some instances, and there is a growing disposition to deal liberally with first-class purchasers. We quote No. 1 Foundry, $22; No. 2 ditto, $20 to $20·50; and Gray Forge, $19 to $20.

Blooms.—The demand is not active, but some business is passing at prices within the following range, say: Charcoal Scrap Blooms, $47; Charcoal Ore Blooms, $41 to $42; Charcoal Billets of superior quality from $60 to $62; and Bars for converting into Steel, made of best Champlain Iron, $75. Strictly Cold Blast Charcoal Blooms, hammered, are quoted, $62 to $64; and Billets, $70 to $74.

Ores.—There is more doing in Ores, and in anticipation of an increase in the demand there is an appearance of greater activity at the mines than for some time past. We quote Jersey Bessemer, f. o. b. Chester, $4·50; Magnetic Ore, f. o. b., $3·50 to $5, according to analysis. Hematites, f. o. b. Topton and Millerstown, $2·25 to $2·50. At Richmond, Va., we quote, f. o. b. as follows: Magnetic, $4; Specular for Bessemer, $4·50; Selected ditto

65 to 70 per cent. of Metallic Iron, $5; all dull and nominal. At Cleveland, Lake Superior, $7; and Republic Mine, $7·50.

Manufactured Iron.—The demand does not improve, and business in this line seems to be almost dead. The depression is very severe, and business is of such a hand-to-mouth character that the mills may shut down at any moment. Prices are unchanged, however, and the best brands are still held at former rates. It is a matter of surprise to the trade that consumption shows no signs of increasing, although stocks must be light and business drags along without animation, with nothing to vary the monotony, and if any little spurt does take place it is immediately followed by another period of stagnation. There is less complaint of cutting, and the fact appears to be that there is no demand of importance—no matter how low the price may be put. Sheet Iron is less active, and considering that this ought to be the period of greatest activity of the whole year, the quietness of the trade is rather disappointing. Plate, Tank and Skelp Iron are in moderate demand, although prices are low and unremunerative. There is also some demand for Bridge Iron, but in no description of Manufactured Iron is there anything like activity, and the past week has been dull, stale and unprofitable. We quote Bar Iron 2c. to 2·10c. for Common and 2·25c. to 2·30c. for Best Refined. Tank Iron, 2⅞c.; C. No. 1, 3c.; C. H. No. 1, 3⅛c. to 3¼c.; C. H. No. 1 Flange, 4¾c.; Pine, B. L. F., 6c.; Pine, E. L. F., 6½c.; Pine, E. L. F. B., 7½c.; and Homogeneous Steel Fire Box Plate, 8c. Muck Bars are held at $37 to $39·50.

Horseshoe Iron.—Business is exceedingly limited. We quote 1¼ and ⅝ to ¾, $67 to $69 per ton. Very dull.

Rails.—There is a more settled feeling in the market, and as a movement among the various companies is on foot, likely to have a harmonizing effect, probably competition will be less active hereafter. In the meantime, the more prominent concerns have secured pretty much all the business they require to keep them fully employed during the winter months, and buyers for spring delivery will doubtless have to advance their bids in order to secure attention. We are advised of sales of nearly 15,000 tons during the week, the larger portion being at a nominally low rate, but under such exceptionally favorable conditions as to delivery and payment as to counterbalance the concessions on the part of sellers. We are also advised of a sale of 2000 tons to a Southern railway, one of 500 tons and another of 400 tons, all $52·50, at tidewater. The above sales cover nearly two weeks, and are not all in addition to the 10,000 tons in our last report. We quote the market steady at $50, at mills.

Iron Rails.—There is no improvement to note, but if anything the market is duller than before, and a very unsettled feeling prevails. The sale mentioned in our New York report of last week has had a depressing influence, and sales cannot be effected unless at very low prices, or upon terms of settlement amounting to about the same thing. Steel Rails at present low prices seem to gain the preference, and a sale of 4000 tons Iron Rails to the new Philadelphia and Atlantic City Narrow Gauge Railway has recently been set aside in favor of Steel Rails, the figures being $40·50 against $53, delivered here. We quote the market very dull and nominal at $37 to $39, at mills.

Spikes.—The demand for Railway Spikes is moderate at about 2·25c. to 2·50c., according to quantity and quality. Mining Spikes have sold very freely the past few days as follows: 4 to 4½ by ¼, 2¾c.; 4 to 4½ by 7-16, 3c.; 3½ to 4 by ⅝, 3½c.

Old Rails.—The demand is very light, and where sales are pressed low prices have to be accepted. A few small lots have been placed at about $22; a lot of 200 tons very superior quality at $22·50, and 500 tons at about $21·50. We quote the market quiet and easy at $21·50 to $22·50.

Car Wheels.—A sale of a small lot is reported at $19, at which price more would be taken, but holders are firm at $19·50 and upward.

Scrap Iron.—The demand is less active, and with increased offerings prices are a trifle weaker. Prices vary considerably, quality also, and sales are reported both above and below our quotations, which, however, represent a fair average of the market, say: Cast, $15 to $17; Wrought, $24 to $26.

Nails.—Business is only moderate, but prices are unchanged at $3·25 per keg, with 25c. to 35c. off to buyers in quantity.

Tin Plates.—There is a fairly active business doing, the average being somewhat in excess of last year at this season, and the trade may be said to be in a healthy condition. We quote in United States currency as follows: I. C., 10x14, $8 to $8·25; I. X., 10x14, $10·25 to $10·50; Best Charcoal Leaded, 28x20, $15·50 to $17; other good brands, $14·25 to $14·75; good fair, $13·75 to $14·50; Bright Tin for Cans, &c., $6·50 to $7·25; good Bright Tin, do. $7 to $7·37½; Coke, leaded, 14x20, $6·50 to $6 75.

Lead.—The Market is very quiet; no sales are reported during the week. Prices are entirely nominal as follows: Domestic, 6·20c. to 6·25c., currency, and Foreign, 6·50c. to 6·60c., gold.

Shot.—The demand is about an average at the following quotations: Drop Shot, 25 lb. bags, 9¾c.; do., 5 lb. bags, 10¾c.; Buckshot, 25 lb. bags, 10¾c.; do., 5 lb. bags, 11¾c.; Conical Balls, 25 lb. bags, 10c. per lb., net; Bar Lead, 5 oz., ½ lb. and 1 lb. bars, 8¾c., less 10 per cent. to the trade.

Old Metals.—Market continues very dull. We quote: Heavy Old Copper, 16½c. to 17c.; Light Tinned Copper, 15c.; Copper Bottoms, 14c.; Heavy Red Brass, 13c.; Light Red Brass, 12½c.; Heavy Yellow Brass, 11c.; Light Yellow Brass, 10c.; Heavy Clean Pipe Lead, 5½c.; Junk Lead, 5c.; Tea Lead, Light Paper, 5½c.; Tea Lead, Heavy Paper, 5c.; New Zinc Clippings, 4¼c.; Old Sheet Zinc, 4c.; Yellow Brass Turnings, 8c. to 9c.; Red Brass Turnings, 10c. to 10½c.; Plumbers' Lead Joints, 6½c.

PITTSBURGH.

Office of *The Iron Age*, 14 Fifth Avenue,
PITTSBURGH, Oct. 31, 1876.

Pig Iron.—The market has been dull during the past week—unusually so. Mill owners in consequence of the unsatisfactory condition of trade in Finished Irons are buying very sparingly, carrying no more stock than they can possibly avoid, and the probability is that this course will be closely adhered to during the remainder of the year, or until there has been a revival in the market for finished goods. Consumers generally complain that at current rates the raw article is higher relatively than the product, and while it is not expected even by buyers that Pig Iron will rule any lower, the prospect of an early advance is not very encouraging. Producers generally feel very much discouraged, and it is not surprising, in view of the fact that the tide has been steadily against them for between three and four years. They have had little or no margin for profit since before the panic. Prices, as compared with last week, unchanged. Bituminous Coal, smelted, and Coke Irons—No. 1 Foundry, $24 to $25, 4 months; No. 2 Foundry, $23 to $24; Gray Forge, Neutral to Red-short, $21 to $22; White and Mottled, $18 to $20. Hanging Rock Charcoal—No. 1 Foundry, $27 to $28, 4 months; No. 2 Foundry, $25 to $26; No. 3 Foundry, $23 to $24.

Manufactured Iron.—The market for all the leading sizes is reported dull, orders have fallen off considerable of late, and what is still worse, prices are down so low that there is no margin for profit, and no regularity; the irregularity in rates, together with the tendency being downward, has not been without its effect in curtailing the demand, as neither jobbers nor consumers will naturally buy any more than is necessary to supply their immediate actual wants while such is the case. Bars are still quotable at two cents, equal to 3½c., for Sheet, and 2·10c. for Hoop; these rates, it is alleged, do not more than cover actual cost, yet it is said they are being shaded by some makers, whose financial necessities force them to sell at the best rates they can obtain.

Nails.—The demand has fallen off somewhat within the past week or two, as it usually does at this particular time, and no general improvement is expected until after the close of the year. Prices remain unchanged at $2 85, sixty days, for less than 200 kegs, and $2·75 for 200 kegs and upward, with the usual discount of two per cent. for cash.

Steel.—The demand for Steel has also fallen off considerably of late, but the mills generally are still pretty well supplied with orders, and the probability is that the most if not all of them will have about all they can do until the close of the year, when it is customary to stop and take stock and make repairs. No change in prices, which for the lower grades are reported unremunerative, in consequence of an active competition.

Castings.—There is a fair degree of activity in the stove trade, but machine and pipe founders generally report business dull, and, as in nearly every branch of the iron business, prices are reported unsatisfactory.

Hardware.—The general Hardware trade is reported backward and unsatisfactory; some manufacturers are reported as being pretty well supplied with orders, while others are doing but little. The Jacobus & Nimick Mfg. Co. report that they have a very fair export trade for Locks, Coffee Mills, Scales, &c., &c., but that the local demand is light.

Coke—Continues dull, and no general improvement can reasonably be expected until after there has been a revival in the Pig Iron trade. Prices nominally unchanged, $2·25 to $2·50 per ton, delivered free on cars in Pittsburgh.

Petroleum.—The hitch between the combination and exporters continues, and business here in refining circles is, and has been for several weeks past, very dull. The combination refiners who now own and control nearly all the refineries in the country are determined to have a fair margin for profit, and the probability is that the exporters will have to succumb, as they want oil and can get it from no other source.

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, Richmond, Va., writes as follows under date of Oct. 30: No change in the Iron market here. Prices are fully maintained:

Virginia cold-blast Charcoal Pig Irons	$28·00 @ 35·00
Virginia hot-blast Charcoal Pig Irons..	24·00 @ 28·00
Va. hot blast Coke Pig Iron, No. 1 ex.	24·00 @ 25·00
" " " " No. 2 ex.	22·00 @ 23·00
" " " " No. 3 ex.	19·00 @ 20·00

CHATTANOOGA.

Mr. S. B. LOWE, under date of Oct. 30, reports as follows: There has been continued activity in Iron during the past week, and considerable inquiry has been manifested, especially for Cold-short grades. Within the district the following sales are reported: 200 tons Gray Forge, $16; 150 tons W. and M., $15 50; 250 tons Gray Forge, average $16·25; 200 tons W. and M., $15·50; 20 tons No. 2 Foundry, $17·50; 30 tons No. 2 Foundry, $18·25; all for cash, f. o. b. Prices are firm at the following quotations:

COKE.

No. 1 Foundry, extra	$22·00 @ 22·50
No. 1 Foundry	20·00 @ 21·50
No. 2 Foundry	17·50 @ 18·50
Gray Forge	16·00 @ 16·50
White and Mottled	15·25 @ 16·00

HOT BLAST CHARCOAL.

No. 1 Foundry, extra	$22·00 @ 24·00
No. 1 Foundry	21·00 @ 21·50
No. 2 Foundry	18·50 @ 20·00
Gray Forge	17·00 @ 17·50
White and Mottled	15·50 @ 16·50

COLD BLAST CHARCOAL.

Car Wheel Metal	$23·00 @ 28·00
Forge Metal	17·00 @ 20·00
Cast Scrap, Heavy, per ton,	12·00 @ 15·00
Cast Scrap, Light "	8·00 @ 10·00
Old Car Wheels "	18·00 @ 19·00
Old Rails "	20·00 @
No. 1 Wrought Scrap, per lb.,	⅜c. @
No. 2 Wrought Scrap "	⅛c. @

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel merchants, 46 and 48 South Charles street, report us the following prices under date of Oct. 31: This market has ruled comparatively quiet for the past week. The increased activity noted for some time past is evidently abating, owing to the uncertainty and near approach of the coming presidential election.

AMERICAN REFINED BAR IRON.

1 to 6 wide by ¾ to 1 thick..	2¼ to 2 4-10c. ₱ lb.
1 to 4½ wide by 1½ to 2 thick	
Round and square, ordinary sizes, from ¾ to 2 inclusive	2½ to 2 4-10c. "
Hoop Iron, 1½ wide and upward	3¾ to 4c. "
Band Iron, from 1½ to 4 in. wide	3 to 3¼c. "
Horse Shoe Iron ¾ to 1 wide by ⅜ to ½ thick	3½ to 4c. "
Norway Nail Rods	7 to 7¼c. "
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes	15 to 15½c. "
Machinery Steel	10 to 11c. "
Cast Spring Steel	9 to 9½c. "
Homogeneous Steel Plate	9½ to 10c. "
Perkins' Horse Shoes, per keg of 100 lbs.	$4·87½
" Mule Shoes " "	5·87½
R. R. Spikes	2¾ to 3c.

Common Horse Nails, from 14c. to 18c. per pound.

	10	9	8	7	6	
Putnam Horse Nails..	23	24	25	26	28c.	per ℔.
Globe Horse Nails...	23	24	25	26	28c.	per ℔.

Messrs. R. C. HOFFMAN & Co., Iron and commission merchants, Nos. 23 and 25 South Frederick street, report the Pig Iron market as follows, under date of Oct. 31: We continue last quotations for Pig Iron, the market being dull and unchanged:

Baltimore Charcoal	$30·00 @ 34·00
Virginia "	28·00 @ 34·00
Anthracite No. 1	23·00 @ 24·00
" No. 2	21·00 @ 22·00
" No. 3	20·00 @ 21·00
White and Mottled	17·00 @ 19·00

ST. LOUIS.

Messrs. SPOONER & COLLINS, Iron commission agents, 409 North Third street, St. Louis, under date of Oct. 26, report the Iron market as follows: Our market is still active, and prices remain firm at quotations:

Mo. Stone Coal, No. 1 F'dry.	$25·00 @ 26·00	4 mos.
" " No. 2 F'dry.	23·00 @ 24·00	4 mos.
" " Gray Mill...	22·00 @ 23·00	4 mos.
" Charcoal, No. 1 F'dry...	23·00 @ 24·00	4 mos.
" " No. 2 F'dry...	22·00 @ 23·00	4 mos.
" " Gray Mill....	22·00 @ 23·00	4 mos.
Tenn. Charcoal No. 1 F'dry..	23·00 @ 24·00	4 mos.
" " No. 2 F'dry	22·00 @ 23·00	4 mos.
" " Gray Mill....	21·00 @ 22·00	4 mos.
Tenn. & H. R. Coke Iron No. 1 F'dry	25·00 @ 26·00	4 mos.
Tenn. & H. R. Coke Iron No. 2 F'dry	23·00 @ 24·00	4 mos.
Tenn. & H. R. Coke Iron Gray Mill	22·00 @ 23·00	4 mos.
H. R. Charcoal No. 1 F'dry...	25·00 @ 26·00	4 mos.
H. R. " No. 2 F'dry..	24·00 @ 25·00	4 mos.
H. R. " Gray Mill.....	24·00 @ 25·00	4 mos.
Massillon Iron. No. 1	29·00 @ 31·00	4 mos.
S. Ohio Am. Scotch	24·00 @ 26·00	4 mos.
Mo. Charcoal Blooms	50·00 @ 60·00	4 mos.
" Scrap "	45·00 @ 50·00	4 mos.
Mo. Charcoal Hammered Billets	75 00 @ 80·00	4 mos.
Assorted Bar Iron	@	2½ rates.
No. 1 Wrought Scrap	·90 @	
Heavy Cast "	·65 @	
Light Cast "	·45 @	

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of Oct. 30, write us as follows: The market is firm for nearly all grades of Iron, with a good demand. Most of the sales made are at outside figures. We revise quotations as follows. The usual time, 4 mos., allowed on quotations below:

HOT BLAST CHARCOAL.

No. 1 F'dry, from Hanging Rock Ores.	$24·00 @ 25·00
" 2 " " " " ..	22·00 @ 23·00
" 1 Mill, " " " ..	20·00 @ 21·00
" 1 F'dry, from Alabama, Georgia and Tennessee Ores	22·00 @ 23·00
" 2 F'dry, from Alabama, Georgia and Tennessee Ores	21·00 @ 22·00
" 1 Mill, from Alabama, Georgia and Tennessee Ores	20·00 @ 21·00

HOT BLAST STONE COAL AND COKE.

No. 1 F'dry, from Hanging Rock Ores.	$22·00 @ 23·00
" 2 " " " " ..	20·00 @ 21·00
" 1 Mill, " " " ..	20·00 @ 21·00
" 1 F'dry, from Alabama, Georgia and Tennessee Ores	21·00 @ 22·00
" 2 F'dry, from Alabama, Georgia and Tennessee Ores	20·00 @ 21·00
" 1 Mill, from Alabama, Georgia and Tennessee Ores	20·00 @ 21·00
No. 1 F'dry, from Missouri Ores	— @ —
" 2 " " "	— @ —
" 1 Mill, " "	23·00 @ 25·00

COLD BLAST CHARCOAL.

Car Wheel from Hanging Rock Ores..	35·00 @ 43·00
" " Tennessee Ores....	26·00 @ 28·00
" " Alabama and Georgia Ores	28·00 @ 40·00
Car Wheel from Kentucky Ores	28·00 @ 42·00

BOSTON.

OCT. 28.—*Pig.*—There is little new to note. The demand is of a restrictive character, although holders talk rather more confidently. They state that the sales of the past three weeks have been unusually large to all the furnaces, and that the great piles of stocks that have marked the Philadelphia stock yards and the Pennsylvania manufacturing localities have been wiped out. Certainly the stocks for the market here are quite small—never before, probably, so light—but still there is no inducement to fill up. We note car lots ranging from $22 to $25, as to brands and quality. *Bar* is selling in a jobbing way, with a slight increase of business, while the Iron for three new vessels has been contracted for during the week, with schedules on two others in the market likely closed late on Friday. The market for Common Iron is just a trifle steadier, while the improvement in the price of Refined is noticeable. We quote $39 for Refined and $40 for Common per ton—quite low—with two dealers indifferent to sell at these prices. *Steel* is moving a trifle more freely than a week ago for machinery purposes, with several large orders reported placed for Saw and small Edge Tool Steel. We quote: American Tool, 14c. to 15c.; American Machinery, 8c. to 9½c.; Bessemer Tires, 5¾c.; Sweet's Excelsior Tire, 7½c.; English Tool, 15½c., gold. *Copper* has eased down a trifle on spot lots, sales having been made as low as 21c., cash. But holders on futures are stiff at 22c., with very little business to report. For Manufactured we quote: New Sheathing, 31c.; Bolts and Braziers, 32c.; Yellow Metal Bolts, 26c.; do. Sheathing, 21c. *Lead* is a little easier, a change on the tone from a week ago. Here the market is nominally unchanged, although sales might be effected under our quotations. We quote: Pig, 6½c. to 7c., currency, for Domestic; Sheet, 10c.; Pipe, 9½c.; Tin Lined Pipe, 16½c.; Bar Lead, 9½c., less usual trade or 10 per cent. discount. *Antimony* is dull and easier at 15c., gold, for Boston spot lots. *Spelter* is easier at $7·15 on the spot in 10 ton lots. *Tin* is quite firm, both here and abroad, with a better business doing in both Pig and Plates. We quote: Straits, 17¾c. to 18c.; Banca, 21½c. to 21¾c.; Refined English, 17½c. to 18c., gold. We quote Plates: Charcoal I. C., $7·50; Coke, $6·25; and Terne at $7·50 to $8, gold.—*Commercial Bulletin.*

CINCINNATI.

Messrs. L. R. HULL & Co., under date of Oct. 28, write us as follows: PIG IRON.—The demand continues good for all grades, and appears to be general and not confined to any particular quarter. Stocks are becoming lighter, and the increased inquiry is making apparent the comparatively small amount of desirable Iron for sale at present rates. Some furnaces are holding entirely out of the market, and others are willing only to sell sparingly, and generally at an advance over what has until very recently been considered full market rates. A better feeling is entertained regarding the early future of the market, and confidence is reviving:

HOT-BLAST FOUNDRY.

Hanging Rock No. 1, Charcoal	₱ ton,	$24·00 @ 24·50—4 mos.
Hanging Rock No. 2, Charcoal		22·50 @ 23·00—4 mos.
" No. 1, Coke		24·00 @ 25·00—4 mos.
" No. 2, "		22·00 @ 23·00—4 mos.
" No. 1, Stonecoal		22·00 @ 22·50—4 mos.
Virginia No. 1, Coke		23·00 @ 24·00—4 mos.
" No. 2, "		21·50 @ 22·00—4 mos.
Ala. and Tenn., No. 1, Charc'l		23·00 @ 23·50—4 mos.
" " No. 2, "		22·00 @ 22·50—4 mos.
Red Short, No. 1, Coke		25·00 @ 25·50—4 mos.
Fannie U. S. Scotch, No. 1		24·50 @ —4 mos.
Alice " No. 1		25·00 @ —4 mos.
Southern Ohio Am. Scotch, No. 1		22·00 @ —4 mos.

FORGE IRONS.

Hanging Rock No. 1, Charcoal	₱ ton.	$21·00 @ 21·50—4 mos.
Hanging Rock No. 1, Coke		21·00 @ —4 mos.
Virginia, No. 1		20·50 @ 21·00—4 mos.
Ala. and Tenn., No. 1, Charc'l		21·50 @ 21·00—4 mos.
Red Short, No. 1, Coke		22·00 @ 23·00—4 mos.
Cold Short, No. 1, Stonecoal		19·00 @ 20·00—4 mos.

CAR WHEEL AND MALLEABLE.

Hanging Rock	₱ ton.	$40·00 @ 45·00—4 mos.
Southern and Western Brands		35·00 @ 40·00—4 mos.

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels).

PARIS, Oct. 16, 1876.—*Metals.*—While the paralyzation in the metal trade of Europe lasted, both consumers and dealers operated with great hesitation, and kept as light stocks as possible. They concluded that it was was better to let the bulk of stocks be held at the ports. This has been the case, and as the tendency has been a downward one up to quite recently in most metals, the extreme caution displayed by the trade has saved the latter a deal of money, the losses chiefly falling to the share of merchants at the ports. It was to be foreseen, however, that the trade would be caught unawares when the time for a sound revival approached, and this has been especially the case as regards *Copper*. With exhausted stocks inland, and moderate ones at the ports, there was nothing to prevent this metal from rising materially the moment it became evident that a favorable turn of a lasting nature was at hand, and this is what we are now witnessing. Wallaroo Copper seems to be quite scarce and much wanted in England. The speculators at London have not been idle while the metal was at its lowest, and large amounts are now held out of the market there by parties having the amplest of means. Under these circumstances it is difficult to foresee where prices will eventually be carried to. We have been quiet here, and quote as follows, deliverable at Havre: Chili Bars, 195 francs; Common ditto, 190; Ingots, 200; Tough Cake, 200; and Pure Corocoro Ore, 190. Havre is inactive at the following rates: Chili Bars 185 to 190; Peruvian Ore, 185 to 190. At Marseilles nothing of special interest has happened; they quote Red Tokat, 180; Small refined Ingots, 180; Bolts, 230; Sheathing, 220; Yellow Metal ditto, 210. *Tin*—There has been but comparatively little fluctuation during the week. Banca and Billiton have now declined to such a low point that these descriptions are competing to advantage with Straits and Australian in the English market. Considerable amounts are leaving Holland for London, and the Continent is thus eased of an excess, which does not prevent the article from still being under a cloud, the joint visible supply in both countries being larger than ever. We have been quiescent here, and quote Banca, deliverable at Havre, 192·50 francs; other descriptions are nominal both here and at Havre. Marseilles is steady at 200 for Banca, 190 to 195 for English Refined, and Straits and Billiton, 185 to 190. *Lead* has been slightly looking up in the principal markets, including ours. We quote French, deliverable here, 53 francs, and all foreign descriptions here and at Havre, 53; Soft Spanish, First Fusion, commands at Havre 52·50 to 53. Marseilles now quotes lead at very reasonable figures: Soft Refined, 50·50 francs; Second Fusion, 50; Manufactured, 56 to 57. *Spelter.*—This article is now assuming a duller mood, the active season having passed by. We are quiet here as follows: Silesian and other descriptions, both here and at Havre, may be nominally quoted, 60 francs; old Spelter is selling at 40. At Marseilles old resmelted sells at 52, while sheet ranges between 75 and 80, less 3 per cent. At Havre, Silesian, 59·50 to 60. *Iron.*—If we are to believe what we are told from all quarters, the same firmness prevails through out France, notwithstanding the fact of our having been less active during the week. At all events, at the North Merchant Iron is not quoted below 170 francs per ton, and there have been instances in which more has been obtained. The Haute-Marne remains steady at 110 to 115 francs for Charcoal Pig. *Coal.*—Although the general run of business in the Coal branch has been quite satisfactory during the week, prices have been stationary at 15 francs for mixed Coal, and 27 for large. At St. Etienne the market is tolerably animated. We are steady here at 55.

BELGIUM.

(Revue Universelle).

BRUSSELS, Oct. 16, 1876.—*Iron.*—There have been imported into Belgium, during the first eight months of the year, 467,000 tons of ore, against 582,000 and 496,000 in 1875 and 1874; of Pig Iron, 133,000 tons, against 95,000 and 99,000; of Wire, Rails, Sheet, Anchors, Chains, Nails and Cast Iron but 8000 tons, against 19,000 and 10,000. We have exported of Iron Ore 101,000 tons, against 99,000 and 65,000; of Pig Iron, 7000, against 9000 and 11,000, and Wire, Rails, etc., 130,000, against 141,000 and 169,000. A good deal of discontent is expressed about the manner in which the Minister of Public Works has been adjudicating upon certain tenders recently made to the government, in which it is pretended that a good deal of favoritism has been indulged in, overriding the *bona fide* offers of applicants at extremely low figures. There has at all times been much jealousy among manufacturers in trying to get government work, and disappointed parties are but too ready to blame the public officers; unless, therefore, it can be proved beyond a doubt that injustice has been done, such complaints go for nothing, and in this case we are still lacking such proof. *Coal.*—The campaign for the winter supply is opening auspiciously. Very large shipments have been made from the mines during the week, and more Coal could have been got out of the way but for the insufficiency of the means of transportation by rail. Some producers, especially in the Liege district, have sold their Coal all the way to the beginning of March. This is Coal for household purposes, chiefly, while for industrial ones there is comparatively little doing as yet.

GERMANY.

(Borsenhalle).

HAMBURGH, Oct. 15, 1876.—*Metals.*—Without wishing to attach greater importance to the increased animation perceptible in the metal trade of Germany, it cannot be denied that things look decidedly brighter, and would do so a great deal more but for the uncertainties inseparable from the state of war in the East. Austria always does a large business down the Danube, trades extensively with Constantinople and Asia Minor, and the bulk of what is thus disseminated in the metal line is drawn from Germany or passes through Germany in transit. All this trade has suffered materially since the month of May; many populations that were good customers have been ruined, or at least impoverished. Merchants dealing with parts of the East, not yet so deeply affected, nevertheless proceed with great caution and decline giving credit. *Copper.*—The market has been slightly looking up at the centers of distribution. Berlin quotes: English and Australian, 78 to 80 marks; and Refined Mansfield, 80 to 80·50. We are steady here at the following quotations: Drontheim, 87; Norwegian, 82·50; Quincy, 92; Minnesota, 104; Chili Bars, 75; and Best Selected, 85 to 86. Stettin still ranges between 85 and 93. *Tin*—Improves slowly. We quote Banca 82, and English, 77 to 81. Berlin quotes Banca 77·50 to 78, and English, 76·25 to 76·50. Stettin is unaltered. In *Lead* a better feeling has been observable. Berlin quotes Tarnowitz, Hartz and Saxonian 20·50 to 21. We are firm here as follows: English, 23 to 24; Sheet, 25 to 25·50; German Pig, 22 to 23; English White Lead, 33, and Dutch, 33·50. Stettin is well supported; Spanish, at 26 to 27; Tarnowitz, 21 to 23; other sorts, 21 to 23. *Spelter* is inactive. Berlin quotes Silesian 23 to 23·70. At Breslau, Common is worth 21·60 to arrive; W. H., 22, and Gudulla, 22. Stettin maintains its figure of 23 to 25·50. We quote Silesian here, spot and to arrive, 24. Zinc White, 33 to 37.

HOLLAND.

(Koch & Vierboom).

ROTTERDAM, Oct. 15, 1876.—*Tin.*—There is greater firmness perceptible. Banca has been sold on the spot at 42½ guilders, and Billiton at 41½ to 41¾, spot and landing.

EXPORT OF TIN FROM HOLLAND.

	Seven Months.		
	1876. Tons.	1875. Tons.	1874. Tons.
Germany	1,922	2,415	1,938
England	38	386	256
Belgium	1,185	1,005	912
France	325	256	331
Hamburg	218	239	237
United States	34	33	16
Other countries	254	385	160
	3,976	4,719	3,750

EAST INDIES.

(Gilfillan, Wood & Co.)

SINGAPORE, Sept. 9, 1876.—*Tin.*—Supplies continue to come forward on a very moderate scale, and at present prices we do not expect improvement in this respect; last arrivals fetched $19·25 per picul, at which the market closes steady. In Penang the market has been supported by a demand for China at $19·87½ per picul for unsmelted Tin, a price European buyers cannot afford to pay. *Tonnage.*—There are a fair number of disengaged vessels in harbor, and rates are weak. The Robert Morrison has cleared for New York, leaving the Varona still on the berth. The Glarnis Castle cleared on the 29th ultimo. For Boston the Mennon has cleared, leaving the berth vacant. Exchange has declined to 4 2⅝ for 6 months' sight drafts on London. Export of Straits Tin to the United States for the first eight months of 1876, 30,377 piculs, against 36,321 in 1875, 26,355 in 1874, 22,967 in 1873, 42,903 in 1872, 43,257 in 1871, and 40,692 in 1870.

(Aitken, Spence & Co.)

COLOMBO, Sept. 16, 1876.—*Plumbago.*—Supplies very small, and prices asked by dealers considerably higher than the equivalent of those now ruling in the consuming markets. *Shipping.*—The Lady Gertrude, 499 tons, has been fixed to load for New York, taking about 160 tons Plumbago. The Annie Florence sailed on the 14th for Galle. Another handy sized bark is wanted to follow for New York, October loading. Exchange closes with an upward tendency at 1/8⅛ for six months' sight, Bank bills; Credits, 1/8¼; Documents, 1/8¾. There is no private demand. We quote, free on board, without commission, exchange at par: Freight to New York, 65/ per 20 cwt.; Plumbago, Lump, cleaned, 300/ per ton; Chip ditto, 180/ per ton; and Dust ditto, 125/ per ton, including packages per ton and duty. Total exports from October 1, 1875, to September 16, 1876, 54,885 cwts., against 29,803 in the previous year. Distribution to the United Kingdom, 66,227 cwts.; to Marseilles, 325; to Trieste, 362; to Australia, 205; and to America, 49,032 cwts.

CHINA.

Arnhold, Karberg & Co

HONKONG, Sept. 8, 1876.—*Lead.*—The market is rather quieter, but the belief in a limited floating supply makes holders comparatively confident as to the future, and prices continue to be well maintained. Sales, 700 piculs. Quotation ranges from $7·60 to $7·90 per picul. *Tin.*—Heavy supplies from the Straits have sent prices back about $1 per picul, but a large business has been done at the reduced rates. Sales, 2800 slabs. Quotation, $19·50 to $21·75 per picul. *Quicksilver.*—A drop of $5 per picul has been submitted to for this article. California is offering, to arrive, at $67·50 per picul. Sales, 1590 flasks. Quotation, $66 to $68 per picul.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

SHEFFIELD, ENG., Oct. 16, 1876.

THE REVIVAL

of trade here and throughout the country, to which more or less detailed reference has been made in several of my recent letters, would appear to be growing in some of the iron districts. Reports from Scotland, for instance, are of a tolerably cheering nature as to the general manufactured iron trade, and the statements I shall give in a subsequent part of this communication show that the pig iron market has undergone a sustained change for the better. This improved state of affairs is confirmed by the position of the West Coast producers, who are clearly better supplied with orders, and have advanced their Bessemer hematites in price. Throughout Lancashire, where there are a large number of foundries, locomotive factories, engineering establishments and several large iron and steel works, there is an increased steadiness which gives hope of a better immediate future. In the North of England, a term generally used to indicate the Cleveland, Durham and Northumberland iron trade, a revived demand for plates and miscellaneous iron has to be noted, although the rail mills continue to be very badly engaged. Then we hear from West and South Yorkshire of a fair amount of business, which is also the announcement from Derbyshire, North Staffordshire and Shropshire. At Sheffield we decidedly observe an almost general improvement—even though it is slight in many instances—and from Birmingham reports as to the hardware industries are encouraging, although there, as well as in the contiguous district of South Staffordshire, the iron trade is still very quiet. From South Wales and Monmouthshire we hear, as yet, of no very marked alteration in the general state of things. Striking an average, however, we may very safely say, without being unduly elated or too confident of continuance, that the iron and allied industries are now "round the corner."

SANDERSON BROTHERS' "EMIGRATION"

is still the subject of discussion here, and appears to have raised a little demon which the newspapers are determined to thrash to death. Mr. W. Mattieu Williams sends a letter to *Iron* in which he discusses the alternative theories as to whether Sanderson Bros. action may be termed "desertion to the enemy" or "carrying war into the enemy's camp." He accuses your people of "profound ignorance of the first prin-

ciples of political economy," and in the course of a long disquisition argues that it is quite clear that English manufacturers of protected goods may gain by establishing branch factories in the United States, and pocketing the "fool's tribute," which would otherwise be appropriated by their American rivals. After that advice I suppose you may expect the Britishers to cross the Atlantic in search of sites by the thousand. In the meantime let us hear

WHAT MR. GLADSTONE SAYS

on the subject, he having been written to by the same persons, who a fortnight or so since obtained the opinion of the Earl of Carnarvon: The inquirers addressed the following note to Mr. Gladstone: "It has just been announced in the local newspapers of this place that, in consequence of the heavy protective duties of the United States proving almost entirely prohibitive to the export of cast steel from this country to those States, a Sheffield firm have transferred the whole of their American business to America, having started works for making steel near New York. This being so we beg to ask your opinion as to whether this may be considered a legitimate use of English capital, inasmuch as it will employ foreign workmen in a foreign country, and also whether you consider it would or would not be a fair retaliation upon the Americans to impose a tax upon such of their productions as are sent here and to our colonies." To these inquiries Mr. Gladstone, the acknowledged master of British finance, the friend of Cobden and Bright, replies: "The removal of capital and establishment to which you refer, however much they may be regretted, is made in the exercise of a legal power with which I have no title of any sort to interfere. Retaliatory duties such as that you mention are plausible in appearance, but I believe them to be condemned by all the greatest authorities among our countrymen of the present and of past generations." Evidently, then, retaliation is not favored by the leading British politicians of the day.

THE WEEK'S RAILWAY ACCIDENTS

have been on a somewhat disappointing scale to the blood-thirsty mind. Some of them have been incubated under the most favorable conditions, have had the best possible chances of succeeding as smashes, have been fostered by officialism and nursed by that good lady, Mrs. Carelessness, yet have in the most disappointing manner dwindled to the most insignificant of proportions. The passengers, of course, may have appreciated the results. You cannot account for the eccentric tastes of the public. At Lincoln, for instance, a pointsman at a busy junction went off duty at night before the arrival of his successor, and in order to prevent the neighborhood from being annoyed by whistling he most thoughtfully placed the signals at safety. This foresight was of itself highly commendable, but the general effect of the arrangement was inconsiderately spoiled by the next passenger train hurriedly endeavoring to disregard the existence of an empty wagon train on the same line of rails. Many persons still speak of the resulting collision in terms wholly unmingled with that calmness and heroism which is popularly supposed to characterize the human race. At a place called Bletchley, also, there was a desperate midnight encounter between a goods and an excursion passenger train, in which fight the passenger train was worsted with some little resultant maiming. Of other similar matters—which one may contemplate with a sort of fiendish enjoyment—I have not space to speak at length.

DYNAMITE AGAIN.

"To what base uses may we not come at last?" Here is our friend and ally, imperious and mighty dynamite, made use of by a drunken miner for suicidal purposes. So powerful an agent reduced from blowing up mines or tearing the rocks asunder to the ignoble rending apart of a collier's limbs! Yet such is the fact, a miner named Duncan having committed suicide with it at Nitshill, Scotland, one day last week. A local newspaper thus describes the occurrence, which I take to be wholly novel: "On Monday afternoon he was seen coming out of his house with a parcel in his hand, described as being of about the size of a 2 lb. loaf, and to which was attached two pieces of colliers' 'strum' or match. This parcel contained dynamite. Having procured a match from the house of a neighbor, to whom he remarked that 'they had said a great deal of him lately, but he would put it past them now,' Duncan went out into the street, and, putting the parcel down on the ground, leaned well over it. He then lighted the 'strum' with the match. At this moment some boys, attracted by his unusual attitude, came toward him. 'Keep back,' shouted Duncan, 'for the love of God! or you will be blown into eternity!' Thus adjured, the boys did keep back, and it was well for them that they did so; for a moment later there was a loud explosion, which startled the whole village, and Duncan was instantaneously blown to atoms. On the spot where the dynamite had been laid there was left a hole about 3 feet deep by 2½ wide."

SCOTCH PIG IRON

has remained "firm" throughout the past week, and all prices are well maintained in the face of a continuance of the previous good shipping demand. Despite these facts the stock in Connal's stores has been augmented by 1682 tons, the total now in those warehouses being 93,298 tons, an aggregate which does not, of course, include the stocks held by the makers themselves. Freights to American ports are unchanged.

Messrs. James Watson & Co. report (October 13) as under: "Our market during the past week has been very steady, business in warrants being done from 56/10½ to 57/3, cash, closing sellers at 57/1½, buyers 57/, cash. Shipments last week were 11,903 tons, against 11,746 tons in the corresponding week of 1875." We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	58/	56/
Gartsherrie, "	66/	57/
Coltness, "	70/	58/
Summerlee, "	64/	56/6
Langloan, "	66/	57/6
Carnbroe, "	59/6	57/6
Calder, at Port Dundas	66/	58/
Glengarnock, at Ardrossan	64/	57/6
Eglinton, "	58/	56/6
Dalmellington, "	58/	56/
Shotts, at Leith	65/	57/6
Kinneil at Bo'ness	58/6	54/6

The prices of John E. Swan & Bros. (Limited) are from 6d. to 1/ per ton under the foregoing.

THE NORTH OF ENGLAND

is somewhat agitated, so far as the operatives are in question, owing to the employers in the manufactured iron trade having given notice of a termination of the present rate of wages at the end of a year. The present rate of 8/3 per ton is the lowest that has been current for a period of ten years. The men naturally view the proposed further reduction with very great dissatisfaction, and will, in all probability, organize a resistance should the improvement of trade continue. The umpire in the Northumberland coal trade arbitration (Dr. Lyon Playfair) has just given in his award, which decrees a further reduction in wages of seven per cent. The employers demanded a drop of 15 per cent.

TRADES OF SHEFFIELD.

In the lighter branches of the principal trades carried on in this town and neighborhood, there is, if anything, even more satisfaction expressed at the improved state of affairs than was the case when I last wrote, several of the leading cutlery and electro-plate manufacturers being now very well supplied with orders. This is also the case, to a more irregular extent, in the saw, tool and edge tool departments, some few of the manufacturers of joiners' and other edge tools being quite busily engaged. Other houses devoted to the same line of business complain of a slackness of work, and report that they have still very great difficulty in getting in their accounts. This, indeed, is the general outcry of the travelers out all over the country. They can now get a few orders, but money is as scarce as ever.

When I revert to the iron trade proper, I am not able to report in so favorable a manner, nor do my observations lead to the belief that any great change is at hand. In pig iron, as I remarked last week, there are a fair number of sales for the use of the local founders and others, but the bulk is not heavy, nor are for wardcontracts the rule. Prices are steady. In the North Lincolnshire ironstone district, which is a feeder and valuable source of supply to the South and West Yorkshire manufacturers, dullness still reigns, the majority of the furnaces being out of blast. Matters are so bad, in fact, that a strong stream of emigration is going on from that part of the country.

In finished iron the end of the quarter and the unsettled state of the market, arising out of the possibility of an advance in quotations being declared at the Staffordshire quarterly meetings, have further limited the previously small number of transactions in the open market. Some of the works in the district, however, are producing a common bar at a very low price, one or two of the makers having recently disposed of parcels in the Lancashire market—inferentially for shipment—at appreciably under £7 per ton, delivered either in Manchester or Liverpool. Whether the price pays or not is anything but clear, taking into consideration the costs of materials, labor and other prime charges.

In the armor plate departments there is only a moderate amount of work in hand. At the Atlas Works, John Brown & Co., Limited, the armor fort, citadel and other parts of the Inflexible are in course of being made, the moldings for the rounded parts of the citadel having been received here this week from Portsmouth.

The trade report of the Leeds Chamber of Commerce for the month of September states that "the depression amongst the makers of iron continues, and there is, perhaps, even less disposition to give orders now than there was a month ago. In the locomotive trade orders are difficult to obtain. The machine makers have, with few exceptions, experienced a further falling off, and the tool trade continues without improvement. For cut nails a moderate demand prevails."

A few days ago Messrs. John Brown & Co., Limited, Atlas Works, Sheffield, successfully rolled an armor plate of the hitherto unprecedented thickness of 24 inches. When the rough ends were cut off the plate was found to be in the most homogeneous condition, the iron used being of the ordinary fine quality. The thickest plate previous to the rolling of this was one 22 inches thick.

Some months ago I mentioned that a Leeds firm had arranged to begin making horse nails by machinery, with Swedish iron specially rolled for them here. The firm alluded to was Messrs. Greenwood & Batley, of Leeds, who have now been working the machine—invented by Mr. Brundage, an American gentlemen—for some little time. Each nail is struck 45 times by a steam hammer, a process which is claimed to impart to it a ductility equal to the hand-made article. The machine turns out about 90 nails per minute.

The Albion Steel and Wire Company, Limited, which came into existence in September, 1872, is now likely to be wound up. The nominal capital is £150,000 in £15 shares. The company lost over £73,000 during the first three years of its existence, and has almost always been before the public in a prominent manner by reason of the shareholders' meetings, and the strenuous efforts made some time ago with the view of putting the concern in a better position. These efforts appear to have failed, as on Friday last the directors issued circulars convening an extraordinary general meeting of the shareholders, at which it was proposed to submit certain resolutions having for their object the winding-up of the concern. This course is explained as having been necessitated by the legal proceedings recently commenced against the company by one of its creditors. On Tuesday another circular was issued by the company's solicitor, stating that, in order to prevent the creditor mentioned from obtaining a preference, a petition has been filed, and that an application will be made to the Vacation Judge on October 24th.

Some classes of house coal continue to "go up," nominally at all events. In one case I hear of an advance of 1/6 per ton, in another of 1/ and in a third 2/ per ton; but I greatly question whether, in any instance, the rise can safely be enforced, now that the market is so plentifully supplied. Steam and gas coal are unchanged. An order just promulgated by the Hull Dock Company, to the effect that no wagons other than those having "hopper" bottoms shall be used at those docks, has caused some indignation in South and West Yorkshire. At the present time not 10 per cent. of the wagons are so constructed, nor is that form of unloading prescribed at other docks, so that the coal owners are hardly likely to put themselves to serious expense in order to suit the convenience of this particular board. The immediate result will be, I presume, a diversion of shipments to Grimsby, Goole and Keadby.

IN BIRMINGHAM AND STAFFORDSHIRE

the chief events of the week have been the quarterly meetings at Wolverhampton and Birmingham. There was on both occasions a very large attendance of ironmasters, coal owners, manufacturers and others, but the shippers of the great ports were by no means numerously represented. There was no alteration whatever in prices, and exceedingly little business was transacted, especially on export account. Best bars, therefore, remained at £9 to £9. 12/6, although good marked iron was sold at £7. 15/ to £8, and unmarked iron of varying qualities at £6. 12/6 to £7. 10/. There was a very fair demand for sheets, best plates and hoops, at prices ranging from £11 to £20 per ton, some of the medium kinds being rather easier to buy. In the hardware industries there is a more cheerful feeling, some of the colonies having just sent in very fair orders. The Indian market is also looking up now that silver has become dearer, and opinions are freely expressed that the American trade would materially improve if Mr. Tilden were elected president.

SOUTH WALES AND MONMOUTHSHIRE.

Reports from these districts speak of matters in a very gloomy tone. At Tredegar men are being paid off, and most of the machinery is idle. Dowlais is busy in manufacturing iron and steel, almost all of which is going into stock. At Rhymney the steel works are making good progress. The coal exports are still on a large scale.

THE METAL MARKETS

have been steady all round, some prices having gone up. Copper wire has been advanced a half penny per pound. The quarterly meeting of the tin plate trade was held at Gloucester last week, and the trade was reported to be greatly depressed. It was resolved to make no further alteration in prices at present.

The *Mining Journal* remarks: "*Copper.*—Immediately upon the announcement of the charters, which are only 1600 tons for the last half of September, the market became extremely active, and prices have been rapidly advancing ever since. One of the best and strongest proofs of the confidence possessed in the future of this metal may be gathered by the difficulty experienced in securing any large quantity, as the bulk of the stock is held off the market. It is stated, upon reliable authority, that one house alone—a wealthy banker, a millionaire, a second Crœsus—holds about 17,000 tons, which is not much less than the stock in England and France put together, and, consequently, there remains very little obtainable elsewhere. To realize at present prices there can be no object gained, as better security for an investment cannot be had, and higher prices must follow, as consumers will be necessitated ultimately to enter the market. It is currently reported that there are only very light stocks in consumers' hands, and the only way to secure the copper is by paying the increased price and to avoid further loss. This should be done without hesitation, for the next statistical return at the end of the month will probably show a more favorable position than the last synopsis. There is no reason why copper should not be quite equal in value to former times, and taking ordinary periods the price has ruled from £80 to £95 per ton; but if the holder of the 17,000 tons continues to retain his present interest, and subsequent charters are small, the price will not stop even at £85. Wallaroo is becoming quite a fancy article, and most difficult to buy at any price. Burra Burra and other fine descriptions participate in the advance, and are held firmly. We can only quote approximate prices, as the market is so very sensitive that sellers will leave nothing open. As prices get dearer the quantities for sale seem to diminish. The demand has suddenly overtaken the supply, and the consequence is a general rush to lay hold of anything that is available, and this is aided by a strong speculative feeling, which is not unlikely to drive prices at a quick and unexpected rate. Consumers instead of being caught bare of stock at low prices ought to have bought freely and secured all their requirements for some time to come, as the tendency of the market is onward. *Lead.*—The market is steady, but quiet. Prices have not undergone any material alteration. *Quicksilver.*—The price is the same as last week. *Tin Plates.*—The demand is dull, and prices are easy. As the prices are exceptionally low, it is not improbable that orders will be coming forward more freely, especially as the advices from America regarding trade are so very satisfactory. *Tin.*—This metal has taken another start in an upward direction, and there is little doubt that this time the advance will prove permanent. The whole stock in England and Holland is estimated at only about 1100 tons more than this time last year, whereas the price is about £12 per ton lower, or rather more than £1 per ton for every 100 ton increase. The accounts from Australia speak of the near exhaustion of many of the previous workings, and the considerable losses incurred by many of the miners; under these circumstances supplies will, no doubt, fall off while prices are so low. Consumers ought to take good care to get well into stock, but from all accounts they have brought very little as yet, and, therefore, will have to follow as prices advance."

The following is the fortnightly circular of Messrs. Harrington, Horan & Co., Liverpool, October 14: "For the first few days of this month there was only a limited demand, but on the 6th considerable animation manifested itself, and the price of bars rapidly advanced £4 to £5 per ton. During the past fortnight about 6000 tons bars changed hands at £72. 10/ to £77. 10/ per ton; 250 tons Regulus at Swansea at 14/3; 450 tons to arrive there at 15/; 600 tons to arrive here at 15/, and 625 tons ore at Swansea at 15/ per unit, beside which 1300 tons Californian ore to arrive here sold at 15/3 per unit, and 300 tons Spanish precipitate at 14/ per unit. The buying has been very general, but there is now a pause in the demand, and prices have given way a little, but there is only a comparatively small quantity of copper available, as the principal importers are not sellers at present rates. Charters for the second fortnight of September were 1600 tons fine copper. At the Swansea sale on the 3d instant, 1858 tons ore, average produce 14 3-16 per cent. realized 13/11¼ per unit. Quotations are:

	To-day.	Oct. 15, 1875.
Chili bars	£76. 10/ to £77. 10/	£82. 5/ to £83. 10/
" ingots	£81	£90
" ore and regulus	15/6 to 16/	16/6 to 17/
Corocoro Barilla	17/	18/3

	Oct. 15, 1874.	Oct. 15, 1873.
Chili bars	£83 to £85	£83. 10/ to £87
" ingots	£93	£94
" ore and regulus	16/3 to 16/9	16/6 to 17/
Corocoro Barilla	18/3	18/

ARRIVALS HERE DURING THE FORTNIGHT OF WEST COAST, S. A. PRODUCE.

	Bars.	Ingots.
Cotopaxi, from Valparaiso	818	125
Potosi, "	700	50

At Swansea—Nil.

"Stocks of copper (Chilian and Bolivian) in first and second hands, likely to be available, we estimate at:

	Ores.	Regulus.	Bars.	Ingots.
Liverpool	...	804	9,294	300
Swansea	681	3,763	2,761	...
	681	4,567	11,055	300

Representing about 14,546 tons fine copper, against 14,157 tons 29th ultimo; against 12,510 tons fine copper Oct. 15, 1875; against 14,300 tons fine copper Oct. 15, 1874; against 21,800 tons fine copper Oct. 15, 1873. Stock of Chili copper in Havre, 6855 tons fine. Stock of Chili copper afloat and chartered for to date, 11,000 tons fine. Stock of foreign copper in London, chiefly Australian, 3682 tons fine."

According to the Board of Trade returns, the total imports and exports into and from this country for the first nine months of the following years, were:

Imports.	1874. Tons.	1875. Tons.	1876. Tons.
Copper in Ores	5,486	6,086	8,326
" Regulus	9,513	11,419	10,969
Bars, Cakes and Ingots	29,730	31,420	29,230
In Pyrites, estimated	10,250	10,698	10,654
	54,979	59,623	58,579

Exports	1874. Tons.	1875. Tons.	1876. Tons.
English Copper—Wrought and unwrought	16,420	16,764	16,836
Foreign Copper—Unw't	18,283	11,196	12,774
Yellow metal	10,577	10,418	9,205
	45,279	38,378	38,815

"*Tin.*—Market steady at £74 for Straits; £73. 10/ for Australian; £78 for British, and £64 for Peruvian. *Lead.*—Market firm at £21. 10/ for Ordinary Shipping Brands, and £21 for Spanish without silver *Spelter.*—Market steady at £22. 15/ for Ordinary Silesian Brands."

The Iron Age,

PUBLISHED

EVERY THURSDAY MORNING

BY

DAVID WILLIAMS

No. 10 Warren St., N. Y.

WESTERN OFFICE:

14 Fifth Ave., Pittsburgh.

JOS. D. WEEKS,

Manager and Associate Editor.

PHILADELPHIA OFFICE:

220 South 4th St.,

THOS. HOBSON, Manager.

A Commercial, Industrial

AND

Scientific Review

OF THE

IRON, HARDWARE & METAL

TRADES.

The circulation of *The Iron Age* is more than double that of any other journal of its class in the country.

It is the oldest newspaper in the world devoted to the Iron, Hardware, or Metal Trades, having been established in 1855, under the name of the *Hardwareman's Newspaper*, which name was changed in 1859 to *The Iron Age*. The next oldest journal of its class is *The Ironmonger*, of London, established 1859.

As an advertising medium, to reach the Iron, Hardware, and Metal Trades in all their branches, *The Iron Age* is the best in the country. Although its circulation is so large, we have not fallen into the common error of making advertising rates too high. Our prices are as low as is consistent with profit; we adhere to them without deviation, and our customers find their advertisements profitable.

Rates of Subscription & Postage.

Weekly Edition - - $4·50 a year.

Issued every THURSDAY morning. Contains full Trade reports for the week, brought up to the close of business on the previous day.

Semi-Monthly Edition - $2·30 a year.

Issued the FIRST and THIRD THURSDAY of every month. Contains a full Review of the Trade for the previous half month.

Monthly Edition - - $1·15 a year.

Issued the FIRST THURSDAY of every month. Contains a full Review of the Trade for the previous month.

RATES OF ADVERTISING.

One square (12 lines, one inch) one insertion, $2·50; one month, $7·50; three months, $15·00; six months, $25·00; one year, $40·00; payable in advance.

L. COES'

Genuine Improved Patent

SCREW WRENCHES.

Manufactured by

L. COES & CO.,

Worcester, Mass.

Established in 1839.

Registered March 31, 1874.

We invite the particular attention of the trade to our New Straight Bar Wrench, *widened*, full size of the larger part of the so called "reinforced or jog bar." Also our enlarged jaw, made with ribs on the inside, having a full bearing on the front of bar (see sectional view), making the jaw fully equal to *any* strain the bar may be subjected to.

These recent improvements in combination with the nut inside the ferrule firmly screwed up flush, against square, solid bearings (that cannot be forced out of place by use), verifies our claim that we are manufacturing the strongest Wrench in the market.

We would also call attention to the *fact*, that in 1869 we made several *important* improvements (secured by patents), on the old wrench previously manufactured by L. & A. G. Coes which were *at once closely* imitated and sold as the *Genuine* Wrench by certain parties who seem to rely upon *our* improvements to keep up their reputation as manufacturers, and although the fact of their imitating our goods may be *good* evidence that we manufacture a superior Wrench, we wish the trade *may not be deceived* on the question of *originality*. Trusting the trade will fully appreciate our *recent* efforts, both in improvements on the Wrench and in the adoption of a Trade Mark, we would caution them against imitations. None genuine unless stamped

"L. COES & CO."

Warehouse, 97 Chambers St., & 81 Reade Sts., N. Y.

HORACE DURRIE & CO., Sole Agents.

MEIKLE

CELEBRATED

IRON BEAM DOUBLE SHOVEL PLOW.

☞ Send for Circular. THOS. MEIKLE & CO., Louisville, Ky.

THE PASSAIC ROLLING MILL CO.,

Manufacturers of

WROUGHT IRON BEAMS, CHANNELS, ANGLES, TEES,

And other shapes used in the construction of Buildings and Bridges.

High Grades Merchant Iron, Riveted Work, Rivets, Nuts, &c.

WATTS COOKE, President.

W. O. FAYERWEATHER, Treasurer. Paterson, N. J.

ROEBUCK'S

Cemented Wood & Rubber

WEATHER STRIPS

For Doors and Windows.

Price List mailed on application.

S. ROEBUCK & CO.,

166 Fulton St.,

Near Broadway, NEW YORK.

BARNEY & BERRY'S Patent SKATES.

Price Lists for the Trade now ready by their

AGENTS,

PATTERSON BROTHERS,

27 Park Row, New York City.

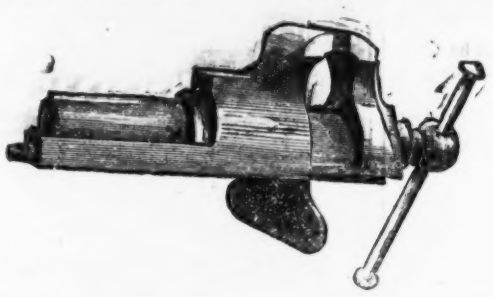
Centennial Exposition Medal and Diploma of Merit have been Awarded to

BARNEY & BERRY,

Springfield, MASSACHUSETTS. **SKATES.** Springfield, MASSACHUSETTS.

Price on above goods have been reduced so far as to be bought fully as low as attempted imitations and infringements. For sale by nearly all Hardware dealers, and at Factory, **SPRINGFIELD, MASS.**

OVAL SLIDE PARALLEL VISE.

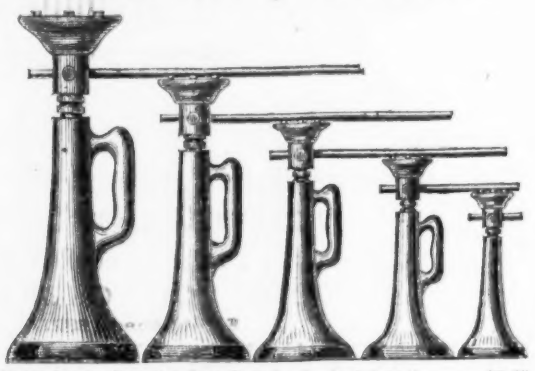


2½ inch Jaw, Heavy Steel Face	Each	$2 70
3 " " " "	"	3 60
4 " " " "	"	6 70

The best cheap Vise in use.

Very large discount to the Hardware Trade.

JACK SCREWS, Bell Bottom.



1¼ inches in diameter, Iron Barrel,	8	inch length		$2 25
1⅜ " " "	8¾	"		3 50
1¾ " " "	9¼	"		4 75
2 " " "	10¼	"		6 00
2½ " " "	12	"		9 50

We make these goods to sell, and so far as price is concerned we meet the views of our customers.

MILLERS FALLS CO., 74 Chambers St., N. Y.

HOWARD PARALLEL BENCH VISE.

MANUFACTURED BY

Howard Iron Works,

Send for price list. **Buffalo, N. Y.**

RUSSELL & ERWIN MFG. CO. NEW YORK & PHILADELPHIA AGENTS.

HARDWARE & HOUSE-FURNISHING TRADE.

ANOTHER

"Novelty of rare practical merit."

Consignment Orders

From the

Wholesale Trade

Will be filled promptly, at best cash rates, to facilitate introduction.

PRICE:

$3·00 per dozen.
Retail, 40 cents.
One-half gross, 10 per ct.
One gross, 15 per cent.
Five gross, 20 per cent.

NO DEVIATION.

We will see to it that the demand next spring is large.

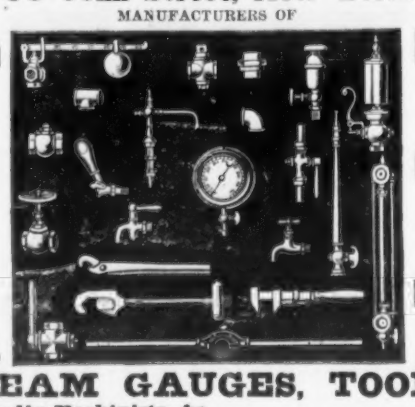
THE HULL & BELDEN CO., Manufacturers, DANBURY CONN.

EATON, COLE & BURNHAM CO.,

58 John Street, New York.

MANUFACTURERS OF

Wrought Iron **PIPE,** Cast Iron 'LANGED PIPE, **Cast Iron** RADIATORS and BOILERS.



Brass & Iron **STEAM** Gas & Water FITTINGS. PLUMBERS' MATERIALS.

STEAM GAUGES, TOOLS,

And all Supplies used by Machinists, &c.

The American Club Skate Still Ahead.

After the severest tests for the past four years, these skates are now admitted to be the only practical **SELF-ADJUSTING SKATES IN MARKET.** The clamps are first adjusted to the shoe by turning the thumb-screw D when the lever C is in the above position; when once adjusted, place the skate on the foot, close the lever C, and the skate is securely fastened to the foot. By the action of the clamps, the skate is always in the center of the foot, and cannot slide from side to side as in other clamp skates. They require no heel plates, key or wrench.

PRICE LIST.	Per Pair.
No. 1.—With Blued Footp'ate, and Runners the same as the best.	$5 00
No. 2.—Same as No. 1, only nicely Nickel Plated effectually prevents the skate from rusting	6 00
No. 3.—Same as No. 2 only before the skate is put together each part is finely Polished and heavily Nickel Plated, the finest skate ever offered	8 00

Sole Jobbing Agents for **WINSLOW'S WOOD TOP SKATES.**

Special trade catalogue sent on application. Address,

PECK & SNYDER, Manufacturers, 126 Nassau St., N. Y.

Bradley's Cushioned Hammer

Has won golden opinions from the Mechanical World during the four years it has been before the public, and has reached a sale of 190 hammers, all in successful operation in this and foreign countries.

It Has More Good Points, Less Complication, More Adaptability, Larger Capacity, Does More and Better Work, Takes Less Power, Costs less for Repairs

than any other Hammer in the World. GUARANTEED AS REPRESENTED.

DON'T YOU FORGET IT.

Established 1832.

BRADLEY MFG. CO., Syracuse, N. Y.

Western Office, 22 S. Canal St., Chicago, Ill., A. B. BARNES, Manager.

John T. Lewis & Bros.,

No. 231 South Front St., PHILADELPHIA.

TRADE MARK.

MANUFACTURERS OF

PURE WHITE LEAD, RED LEAD, Litharge, Orange Mineral, Linseed Oil AND PAINTERS' COLORS.

TRADE MARK

The Atlantic White Lead and Linseed Oil Company,

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White Lead (Atlantic), Red Lead, Litharge & Linseed Oil.

ROBERT COLGATE & CO., 287 Pearl Street, New York.

Established A. D., 1777.

WETHERILL & BRO.,

Manufacturers of

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Offices, 31st. St. below Chestnut, PHILADELPHIA.

Brooklyn White Lead Co.

TRADE MARK.

White Lead, Red Lead and Litharge.

89 Maiden Lane, NEW YORK. FISHER HOWE, Treas.

JOHN JEWETT & SONS,

Manufacturers of the well known Brand of

WHITE LEAD.

TRADE MARK.

Also Manufacturers of

LINSEED OIL

182 Front Street NEW YORK

Pipe, Fittings, &c.

McNab & Harlin Mfg. Co.,

MANUFACTURERS OF

BRASS COCKS AND VALVES

For STEAM, WATER and GAS.

Iron Pipe and Fittings, Plain and Galvanized.

PLUMBERS' MATERIALS.

New Illustrated Catalogue and Price List sent by express to the Trade on application.

Factory, Paterson, N. J. 56 John Street N. Y.

When you visit the **CENTENNIAL,** don't fail to examine the

SELDEN DIRECT ACTING STEAM PUMPS,

No. 3408 PUMP ANNEX,

Especially the

COMPOUND CONDENSING ONE,

which is guaranteed to do the same work for **50 per cent. less fuel** than any other Direct Acting Steam Pump now in the market.

A. CARR, Manufacturer, 43 Cortland St., N. Y.

Pyrolusite Manganese Co.,

MINERS, DEALERS AND EXPORTERS OF HIGH TEST

Crystallized Black and Gray Oxides of

MANGANESE.

Ground, granulated and especially prepared to suit all branches of the home trade.

Warranted to contain from 70 to 90 per cent. peroxide of manganese, and to give satisfaction with regard to price and quality.

ALSO, MANUFACTURERS OF SUPERFINE FLOATED

Standard Barytes.

Office, 214 Pearl Street, New York.

Ludlow Valve Mfg. Co.,

OFFICE AND WORKS:

938 to 954 River St. & 67 to 83 Vail Ave., Troy, N. Y.,

VALVES

(Double and Single Gate, ¼ in. to 48 in.—outside and inside Screws, Indicator, &c.) for Gas, Water and Steam. Send for Circular.

Also FIRE HYDRANTS.

of all kinds, *Made of Iron,* *Steel, Zinc,* *and Copper* *of any Size* *or Shape.*

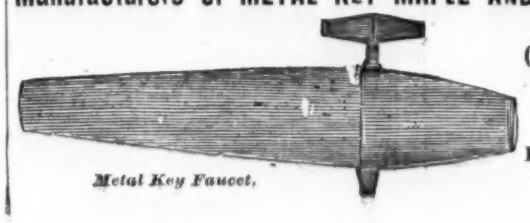
TACKS

Manufactured by

BRIGHAM, LITCHFIELD & VINING, South Abington, Mass.

MALTBY, CURTISS & CO.,

Manufacturers of METAL KEY MAPLE AND ROSEWOOD FAUCETS.



Metal Key Faucet.

Also Manufacturers of

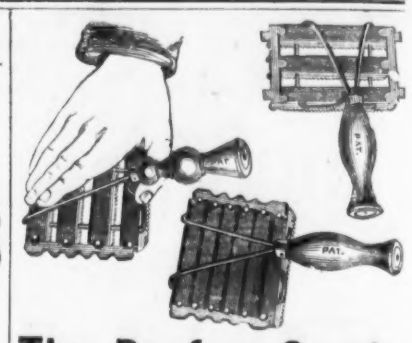
Capewell's Giant Nail Puller.

The Buell Peg Float

AND THE

Little Giant Tack Puller.

34 READE ST., N. Y.



The Perfect Comb.

We call your attention specially to our new patent endless wire frame comb. The result of a long series of experiments, made with a view to meeting all the requirements of a *Perfect Comb.* It is better, stronger, and more durable than any ever before invented. The raised wire shank gives what has never before been attained, viz: a rest and brace for the thumb, in such a position that the hand cannot come in contact with the horse while using the comb. The wire braces which run from the shank over the back to the front teeth give strength and durability in a direction never heretofore attained, and at the same time serve as an extra handle; and when clasped by the fingers in connection with the raised shank the comb is more firmly, easily, and completely held, and with much less fatigue to the hand than is possible in any other formation—in short, it needs but a trial to vindicate its name: **The Perfect Comb.**

THE LAWRENCE COMB CO.

Factory and Office, 382 2d Ave., cor. 22d St., N. Y.

WM. S. CARR & CO.

Sole Manufacturers of

CARR'S PATENT Water Closets,

PUMPS, CABINET WOOD WORK, &c.

106, 108 & 110 Centre Street,

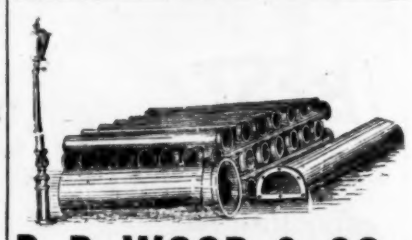
Factory, Mott Haven, - - - NEW YORK.

KNOX AND IMPROVED KNOX FLUTING MACHINES.

8 in., $4·50; 6 in., $3·00; 4 in., $2·50.
Extra Rollers.—8 in., $2·25; 6 in., $1·50; 4 in., $1·25.
Flutes.—10, 12, 15, 18, 21, 24, 27 & 30, less discount.—

H. SAUERBIER'S SONS,

40 & 42 Mechanic St., Newark, N. J.



R. D. WOOD & CO.,

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Manufacturers of

Cast Iron Pipe

FOR WATER AND GAS.

Lamp Posts, Valves, &c.,

Mathew's Pat. Anti-Freezing Hydrants.

400 CHESTNUT STREET.

HARDY & CO.,

Manufacturers of

Police & Fire Department SUPPLIES.

Brass, German Silver & Leather Dog Collars.

102 ELM STREET, NEW YORK.

GEORGE BARNES & CO.,

Manufacturers, Syracuse, N. Y.

The Iron Age Directory

and Index to Advertisements.

CENTENNIAL AWARDS

TO

HENRY DISSTON & SONS,

Keystone Saw, Tool, Steel and File Works,

Front and Laurel Streets, Philadelphia.

A Medal, and a Diploma signed by the President, Director General and Secretary of the United States Centennial Commission, has been awarded to Henry Disston & Sons, Philadelphia, Pa., on the following report of the Judges of Group I, consisting of

ALEXANDER L. HOLLEY, 56 Broadway, New York.
Prof. T. STERRY HUNT, LL.D., F.R.S., St. James Hotel, Boston, Mass.
Prof. J. M. SAFFORD, Tennessee.
S. B. AXTELL, Sante Fe, New Mexico.
JOHN FRITZ, Bethlehem, Pa.
AUSTIN SAVAGE, Boise City, Idaho.
W. S. KEYES, M. E., Eureka, Nevada.
Prof. FREDERICK PRIME, Jr., Sec'v., Easton, Pa.
MATTHEW ADDY, Cincinnati, Ohio.
Prof. G. C. BROADHEAD, Pleasant Hill, Missouri.
Mr. ISAAC LOWTHIAN BELL, F.R.S., M.P., C.E., Pres't., Great Britain.
Mr. ERNST F. ALTHANS, Germany.
Mr. L. SIMONIN, France.
Mr. F .VALTON, France.
RICHARD AKERMAN, Sweden.
Mr. OCHILLE JOTTRAND, Belgium.
Mr. L. NICHOLSKY, Russia.
Mr. NICHOLAS JOSSA, Russia.
Prof. Dr. TH. KJERUNF, Norway.
DON DAN'L DE CORTAZAR, Spain.
EMANUEL BARCENA, Mexico.

REPORT:

CAST STEEL INGOTS, BLOOMS AND PLATES,

Commended for Good Quality.

A Medal, and a Diploma signed by the President, Director General and Secretary of the United States Centennial Commission, has been awarded to Henry Disston & Sons, Philadelphia, Pa., on the following Report of the Judges of Group XV, consisting of

CHAS. STAPLES, Portland, Me.
DANIEL STEINMETZ, Pres't., Philadelphia, Pa.
GEORGE L. REED, Clearfield, Pa.
General JOHN D. IMBODEN, Richmond, Va.
Hon. J. BAIN, Lord Provost of Glasgow, Great Britain.
Mr. D. MACHARDY, Great Britain.
Mr. DIEFENBACH, Sec'y., Germany.

REPORT:

SAWS, Trowels, Plumbs and Levels, Squares and Bevels, Reversible Butt Hinges and Screw Drivers,

Commended as a very large display of Surpassing Excellence of Material, Style and Finish.

A Medal and a Diploma, signed by the President, Director General and Secretary of the United States Centennial Commission, has been awarded to Henry Disston & Sons, Philadelphia, Pa., on the following Report of the Judges of Group XXI, consisting of

GEORGE H. BLELOCK, Springfield, Mass.
W. F. DURFEE, Wisconsin, (at 56 Broadway, N. Y.)
Prof. JOHN A. ANDERSON, President Kansas State Agricultural College, Manhattan, Kansas.
Mr. JOHN ANDERSON, LL.D., C.E., Pres't., Great Britain.
M. LE COMMANDANT F. PERIER, France.
Mr. C. A. ANGSTROM, Sweden.
Mr. AUGUSTE GOBERT, fils, Sec'y., Belgium.
Mr. FELIX REIFER, Austria.

REPORT:

CIRCULAR AND OTHER SAWS,

Commended for Good Workmanship, for the Practical Tools for keeping Saws in good order, and for the Beauty of their General Display.

New York Wholesale Prices, November 1, 1876.

HARDWARE.

Anvils.
American ... ℘ lb 15c. dis 20 %
Wright's ... ℘ lb gold 10½c; over 250 lbs 11c, gold
Armitage's Mouse Hole ... gold 10 @ 10½c
Wilkinson's ... ℘ lb gold 11c
Eagle Anvils (American) ... ℘ lb 9c dis 20 %
Ash Sifters.
J. E. Corning's Barrel Head ... dis 10 %
Rival ... ℘ doz $12·00 dis 10 %
Square ... per doz $2·50 dis 20 %
Augers and Bits.
Conn. Valley Mfg. Co.; Douglass; Ives; Beecher (French, Swift & Co); Griswold; Nobles Mfg. Co.; Kasson's Patent } 1st quality ... dis 40&10 %
Cook's, Douglass Mfg. Co. ... dis 50&5 %
" Ives' ... dis 40&10 %
Snell Mfg. Co. ... dis 25&10 %
Jennings' Bits ... dis 10 %
Ives' "Jennings" Bits ... dis 5&10 %
Lewis' Single Twist Bits ... dis 25 @ 30 %
Andrews' Bits ... dis 40&10 %
Griswold's Patent Bits ... dis 20 %
Expansive Bits, Clark's ... small, $18; large, $26—dis 15 %
" " Ives ... $20 @ $30—dis 30 %
" " Blake's ... $20—dis 40 %
" " Parmelee's ... small, $20; large, $36 ... dis 35 %
Hollow Augers, Douglass'; " " Ives'; " " French, Swift & Co. } dis 33⅓ @ 40 %
" " Bonney's Adjust. ℘ doz $48—dis 25&10 %
" " Stearns' Adjust. ℘ doz $48—dis 25&10 %
" " Ives' Expansive ... each $4·50—dis 40 %
" " Universal Expansive. each $4·50—dis 10 %
Gimlet Bits—Screw, $7·50; no screw, $9 ... dis 20&10 %
" Diamond ... per doz $1·00, dis 10 %
Double Cut Gimlet Bits, Shepardson's ... dis 30 %
" " Ct. Valley Mfg. Co. dis 30&10 %
" " Hartwell's ... dis 50 %
" " Douglass' ... dis 25&10 %
" " Ives' ... dis 30 %
Morse's Bit Stock Drill, List of Jan'y 1, '76 ... dis 25 %
L'Hommedieu's Ship Augers ... dis 20 %
Watrous Ship Augers ... dis 20 %
Vaughan's Post Hole—
6 in. $23 60; 7, 8 and 9 in. $25 per doz ... dis 20 %
Leed's ... $4 00 each—dis 10 %
Awls, Brad Sets, &c.
Awls, Sewing, Common ... per gross $1·35—dis 25 %
" " Best ... per gross $1·60—net
" Shouldered Peg ... per gross 2·25—dis 15 %
" Patent Peg ... per gross ·60—dis 15 %
" Shouldered Brad ... per gross 2·65—dis 25&10 %
Brad Sets, Aiken's ... per doz $13·88—dis 40 %
" No. 42, $10·50; No. 43, $12·50 ... dis 55 @ 60 %
" Clark's ... dis 50 %
" Stanley's Excelsior ... $13 50—dis 30&10 %
Axes.
Blood's ... per doz $15 00 @ 16 50—dis 20 %
D. R. Barton Tool Co. ... ℘ doz $12 00 net
Hunt's ... ℘ doz $11 50 @ 13 50
Collins' ... ℘ doz 10 00 @ 12 00 net @ dis 5 %
H. Clark's (J.C.W. & Co.) bron'd or red. ℘ doz $10, dis 5 %
Hurd's Razor Blade ... ℘ doz 9 00 @ 11 00
Simmons' ... ℘ doz 11 00 @ 11 50
Red Jacket ... ℘ doz 12 00 @ 12 50
Mann's ... ℘ doz 12 50 @ 14 00
" Double Bitted ... ℘ doz 23 00 @ 25 00
Underhill's ... ℘ doz 12 00 @ 13 00
" Crown ... ℘ doz 12 50 @ 13 50
John Leverett's ... ℘ doz 12 50 @ 15 50
Ten Eyck ... ℘ doz $9 50 @ 11 00 net
M. H. Jones & Co. ... ℘ doz 11 50 @ 13 00 net
Nobles Mfg. Co. ... per doz $10 50, net
Elephant ... per doz $9 00 @ 10 50 net
Axles.
Common (Guy C. Hotchkiss, Field & Co.) ... ℘ lb 4½c
Solid Collar, Case Hardened, Chilled Box ... ℘ lb 8c
Axle Grease.—Frazer's ... ℘ lb 6c.
Balances.
Light or "Common" ... dis 25&10 %
All other Spring Balances ... dis 25 %
Bands.—Plated ... new list dis 50&5 %
Iron Rim ... new list dis 25&5 %
Brass (Plated list) ... new list dis 50, 10&5 %
Oreide ... new list dis 50&5 %
Bed Keys.
Gray's Ratchet ... ℘ doz $4 00, dis 15 %
Bells.
Hand, Light Brass ... dis 70&5&10 @ 75 %
" Extra Heavy ... dis 40&10 %
" White Metal ... dis 50&10 %
" Silver Chime ... dis 30&10 %
" Swiss ... dis 25 %
" Globe (Cone's Patent) ... dis 20&10 %
Gong Abbe's ... dis 20&10 %
" Yankee ... dis 35&10 %
" Barton's ... dis 35 %
Crank, Taylor's ... dis 25&10 %
" Brook's ... dis 50 %
" Cone's ... dis 10 %
" Connel's ... dis 50&10 %
Lever, Sargent's ... dis 60&10&10 %
" Taylor's Bronze or Plated Lever ... net
" Japanned Lever ... dis 25&10 %
" Hart, Bliven & Mead Mfg. Co. ... dis 50&10 %
Pull, " " " ... dis 50&10 %
" Brook's ... dis 50 %
" Western ... dis 25&10 %
Call ... dis 15 %
Cow—Common Wrought ... dis 20&10 %
" Western ... dis 20&10 %
" " Sargent's ... dis 60&10 %
" Kentucky "Star" ... dis 20&10 %
" " Sargent's ... dis 60&10 %
" Dodge's Genuine Kentucky, new list—
Nos. 0 1 1½ 2 3 4 5 6 Hog.
$12·00 10·00 9·00 8·00 6·00 5·00 3·50 2·50 5·00—dis 50 %
Yaw's Genuine ... dis 35 %
Texas ... dis 40 %
Bellows.
Blacksmiths', Common. List of Sept. 15 ... dis 25 %
" Extra and Pittsburgh Pattern ... dis 10 %
Moulders' ... dis 25 %
Hand Bellows ... dis 10 %
Blind Adjusters.—Domestic ... ℘ doz $3—dis 20 %
Blind Fasteners.
Mackrell's ... dis 30 %
Van Sand's ... No. 2000, $14·00; dis 25 %
" old pattern ... per gross, $10·50, dis 5 %
Washburn's Patent ... ℘ gross $14 00 dis 5 %
Merriman's ... new list net
Blind Staples.
Boardman's Patent, ⅜ in. and larger ... ℘ lb 37 c
" ¼ in ... " 42 c
Blocks.
Differential Pulley Blocks ... dis 30 %
Tackle, Rope and Iron Strapped, Providence Tool Co.'s list ... dis 30&10 %
Stanley Rule and Level Co. ... dis 25&10 %
Blowers.
Keystone Portable Forge Co. ... dis 30 %
Bolts.
Cast Iron Barrel, Shutter, &c. ... dis 60&10&10 %
Cast Iron Chain ... dis 60&20&10 %
Wrought Iron Barrel ... dis 50, 10&10 %
" " Square ... dis 50, 10&10 %
" " Shutter ... dis 60&10 %
" " Flush, Stanley's ... dis 15&10 %
" " " Sargent's ... dis 50&10&10 %
Carriage and Tire, Common ... dis 75&5 % cash
" " " Norway Iron ... dis 50&10 %
" " " R. B. & W. ... (old list) dis 65&5 %
" " " Philadelphia ... dis 60&10 %
" " " Shelton's ... (old list) dis 60&20 %
Union Nut Company, old list ... dis 65&5 %
Stove—American Screw Co.'s ... dis 45 %
" R. B. & W. ... dis 40 %
" Shelton's Shaved Head ... dis 45 %
Machine ... dis 55 @ 60 %
Bolt Ends ... dis 60
Borax. ... 12½ @ 13½c. ℘ lb

Boring Machines.	Upright.	Angular.
Hovey's, no Augers	$3·15	$4·00 net
" with Augers	5·00	6·00 net
Douglass' no Augers	5·50	7·50 dis 40 %
" with Augers	9·00	11·00 dis 40 %
Parr's, no Augers	5·00	7·50 dis 30 %
" with Augers	7·50	10·00 dis 30 %
Kellogg's, no Augers	5·25	6·75 dis 15 %
Sweets'	3·25	4·00 net
" with Augers	5·00	6·00 net
Snell's	4·25	6·25 dis 25 %
Phillips', with Augers		10·00 dis 25 %

Mortising Machines, $20·00 each ... dis 20 %
Bow Pins.
Union Nut Co. ... new list dis 50&10&5 %
Hotchkiss' ... dis 50 @ 55 %
Humason, Beckley & Co.'s ... dis 50&10 %
Sargent & Co.'s ... $17·00 and $19·00, dis 50&10&10 %
Braces.
Barber's Patent ... dis 40&5 %
Q. S. Backus ... dis 50 %
Wilson Mfg. Co. ... dis 10 %
Spofford's Patent ... dis 50 %
Noble's Patent ... dis 40&5 %
Ives' "Centennial" ... dis 40&10 %
" "Novelty" ... dis 50 %
Common Ball (American) ... dis 30&10 %
Brackets.—Shelf ... dis 60&10 @ 65&10 %
Bright Wire Goods ... dis 65&10&10 %
Bull Rings.—Union Nut Co. ... dis 50&20 %
Sargent's ... dis 60&10 %
Hotchkiss' ... 2½ in., $2·25 net
Humason, Beckley & Co.'s ... dis 50&10&5 %
Butchers' Cleavers.
Humason & Beckley Mfg Co ... dis 30&10 %
D. R. Barton Tool Co. ... dis 30 %
Bradley's ... dis 25 %
Beatty's ... dis 20 %
1 2 3 4 5 6 7 8
$16·50 $19·00 $21·50 $24·00 $27·00 $30·00 $33·50 $36·50
Hart Mfg. Co. ... dis 45&10 %
0 1 2 3 4 5 6
$25·25 $29·75 $34·25 $38·75 $43·25 $48·50 $54·00
Butts.
Wrought Brass ... dis 30 %
Cast Brass ... dis 30 %
COMMON CAST, NOT DRILLED.
Fast Joint, Narrow ... dis 30&10 %
" Broad ... dis 40&10 %
" " Jap'd ... dis 35&10 %
Loose Joint, Narrow and Broad ... dis 50&10 %
" " " Jap'd ... dis 45&10 %
Parliament Butts & Mayer's Hinges ... dis 40&10 %
Loose Pin ... dis 45&10 %
Loose Pin Japanned ... dis 55&10 %
Loose Pin Jap'd, Plated Tips ... dis 50&10 %
DRILLED AND WIRED.
Fast Joint, Narrow ... dis 25&10 %
" Broad ... dis 35&10 %
Fast Joint, Broad, Japanned ... dis 30&10 %
Loose Joint ... dis 45&10 %
" Japanned ... dis 45&10 %
Parliament & Mayer's Hinges ... dis 35&10 %
Loose Pin, no Acorn ... dis 42½&10 %
" Acorns ... dis 40&10 %
" " Japanned ... dis 50&10 %
" " " Plated Tips ... dis 45&10 %
Union Mfg. Co.'s Fancy Butts.—
Figured Enameled Loose Joint ... dis 55&10 %
Nickel Plated " ... dis 33⅓&10 %
Boston Finish, Plain ... dis 80&5 %
" " with Iron Acorns ... dis 75&5 %
" " with Sil'd " ... dis 65&5 %
WROUGHT IRON.
Fast Joint, Narrow ... dis 40&10 %
" Lt. Narrow ... dis 30&10 %
" Broad ... dis 40&10 %
Loose Joint, Broad ... dis 40&10 %
Table Butts, Back Flaps, &c. ... dis 35&10 %
Inside Blind, Regular ... dis 35&10 %
" " Light ... dis 40&10 %
Loose Pin, Wrt. ... dis 40&10 %
Am. Spiral Spring Butt Co., list May 1st ... dis 25 %
Union Spring Hinge Co. ... dis 20 %
Union Mfg. Co. Spring Hinges ... dis 25 %
Blind Butts, Parker ... dis 65&10 @ 70&10 %
" Palmer ... dis 40 %
" Seymour ... dis 65&10 %
" Shepard ... dis 70&10 %
" Lull & Porter ... dis 60 %
" Nicholson ... dis 45&10 %
" Huffer ... dis 33⅓&10 %
" Garretson ... dis 60&10 %
" Clark's, Nos. 1, 3 and 5 ... dis 60&10 %
" Clark's No. 2 ... dis 70&10 %
" " Nos. 2, 4, 4½, 6, 8, 10 ... dis 55 %
" Sargent's ... dis 70&5&10 %
Can Openers.
Messenger's Comet ... per doz $3·00 dis 20 %
American ... per doz 2·25 dis 50 %
Lyman's ... per doz 3·75 dis 20 %
No. 4, French ... per doz 2·25 dis 50 %
No. 5, Iron Handle ... per doz 2·25 dis 50 %
Sprague's ... Nos. 1 2 3 4
Per doz $4·00 4·50 5·00 9·00 dis 55&10 %
Star ... per doz $6·50 dis 25&10 %
Eureka ... per doz $2·50 dis 10 %
Sardine Scissors ... per doz $7·00 dis 40 @ 40&5 %
Caps—Percussion, per 1000.
G. D. ... 37 @ 40c
Ely's E. B ... 1-4s, 58c.; 1-10s, 70c. gold
" Double Waterproof, 1-4s, $1·30; 1-10s, $1·58c., gold
Colt's ... 1-10s, 80c., gold
Carpet Sweepers.
Union ... each $2 75 net
Welcome ... each 2 75 net
Cartridges.—Metallic ... dis 57½ @ 60 %
Cards.—Horse and Curry ... dis 30&10 %
Cotton ... dis 10&10 %
Wool ... dis 15&10 %
Carpet Stretchers.
Cast Steel, Polished ... per doz $5·00 dis 30 %
Cast Iron, Steel Points ... per doz $2·00 dis 45&5 %
Casters.
Bed ... dis 45 @ 50 %
Plate and Shallow Socket ... dis 55 %
Deep Socket ... dis 40 %
Cattle Leaders.
Hotchkiss' Sons' ... net
Humason, Beckley & Co.'s ... dis 60 %
Sargent's ... dis 60&10 %
Chain.
English Coil ... net gold
℘ lb ... 11½ 8½ 7¾ 7½ 7¼ 7c
3-16 ¼ 5-16 ⅜ 7-16 ½
Trace, 6½-10-2 ... by the cask, ℘ pair, gold 50 @ 52c
Trace, 7-10-2 ... by the cask, ℘ pair, gold 55 @ 57c
German Halter Chain ... dis 25 % gold
German Coil ... dis 25 % gold
Galvanized Pump Chain ... ℘ lb 10½ @ 11c.
Jack Chain, Iron ... dis 55&10 %
" Brass ... dis 45&10 %
Chalk.
White ... ℘ gross, 50c net
Red ... ℘ gross, 80c net
Blue ... ℘ gross, 95c net
White Crayons ... ℘ gross, 13c net
Chisels.
D. R. Barton Tool Co. (all kinds) ... dis 20 %
Socket Framing, Douglass, Extra ... dis 60&10 %
" " Crossman ... dis 60&5 %
" " Buck Bros ... new list dis 17½ @ 20 %
" " Hart Mfg. Co., No 1 ... dis 60&10&10 %
" " Merrill ... dis 60&10 %
" " Witherby Tool Co ... dis 60&10 %
" Firmers, Douglass, Extra ... dis 60&10 %
" " Crossman ... dis 60 %
" " Buck Bros ... new list dis 17½ @ 20 %
" " Hart Mfg. Co., No. 1 ... dis 60&10 %
" " Merrill ... dis 60&10 %
" " Witherby Tool Co ... dis 60&10 %
Socket Corner ... dis 60&10 %
Tanged Firmers ... dis 40 %
" " Butcher's ... $5·25 to £ gold
" " Newbould's ... $5·50 to £ gold
" " Spear & Jackson's ... $5·00 to £ gold
" " Buck Bros (Shank) ... $5·25 to £ gold
Clamps.
Iron, Providence Tool Co.'s, Wrt. Iron ... dis 25 %
" Adjustable, Gray's ... dis 20 %
" " Lambert's ... dis 20 %
" " Snow's ... dis 40&5 %
" " Hammer's ... dis 20 %
" Cabinet, Sargent's ... dis 60&10 %
" Carriage Makers', Sargent's ... dis 60&10 %
Clips, Axle.
Norway or Best ... dis 40 %
Superior ... dis 55 %
Cockeyes ... 1¼ in., 28c.; 1½ in., 33c.; 1¾ in., 37c. net
Cocks.
Brass Racking ... dis 45 %
Lock and Globe ... dis 45 %
Lever Bibbs ... dis 45 %
Ale and Beer ... dis 25&10 %
Coffee Mills.
Board and Box ... dis 25 %
Increase Wilson's ... dis 25 %
Selsor's Pat. ... $9·50, $10·50—dis 25 %
American (Enterprise Mfg. Co.) ... dis 20 %
French Steel ... dis 20 %
The Swift ... dis 25 %
Compasses and Dividers ... dis 35&10 %
Bemis & Call Co.'s ... dis 35&10 %
Cook's ... dis 15 %
Excelsior ... dis 40 %
Miller's Patent ... dis 25&10 %
Coopers' Tools.
Bradley's ... dis 15 @ 20 %
Chas. E. Little ... dis 20 @ 25 %
D. R. Barton Tool Co ... dis 20 %
Corkscrews ... dis 25 %
Corn Knives and Cutters.
Bradley's ... dis 10 %
Crow Bars.
Cast Steel ... ℘ lb 11c. net
Iron, steel points ... ℘ lb 5c
Crucibles.—Gautier & Co ... ℘ No. 5½c
Curling Irons, &c.
¼, ⅜, ½ in., $1·80, $2·00, $2·40 ... dis 10 %
Curling Tongs ... ℘ doz $6 50—dis 15 %
Pinching Irons ... ℘ doz 7 50—dis 20 %
Curry Combs.
Curry Comb Mfg. Co ... dis 25&10 %
Hotchkiss' & Kellogg's, Iron & Brass, old list ... dis 40&5 %
Fitch's (List of No. 240, $1) ... dis 25&10 %
Rubber ... ℘ doz, $9·00—dis 15 %
Wood Tooth (Fuller Bros.) ... per doz $2·25 net
Curtain Pins.—Silvered Glass ... new list dis 15 %
Cutlery.
American Table { Meriden } New list July '76, dis 25 %
American Pocket { Cutlery Co } ... dis 35 %
Am. Pocket—Humason & Beckley Mfg. Co ... dis 25 %
Am. Miller Bro.'s Cutlery Co ... dis 25 %
Naugatuck Cutlery Co ... dis 25 %
Dippers.
Britannia ... per doz 7·50—dis 30 %; by bbl. dis 33⅓ %
Cocoa, Plain ... per doz $3·25—dis 20 %
" Rimmed ... per doz 3·75—dis 20 %
Dog Collars.
Embossed Gilt ... dis 20 %
Leather ... dis 30 %
Brass ... dis 25 %
Door Springs.
Torrey's Rod ... ℘ doz $2·50 net
Gray's " ... ℘ doz $2·57 net
Johnson's " ... ℘ doz $3·00 net
Gem (Coil)—
No. 1, Large, Japanned ... per doz $3·50 } dis 10 %
No. 2, Medium, " ... per doz 2·50
No. 3, Small, " ... per doz 2·00
Challenge (Coil)— Nos. 5 7 6
Japanned ... per doz $2·00 2·50 3·50 } dis 10 %
Coppered ... per doz 4·00 4·50 5·00
Galvanized ... per doz 3·50 4·00 4·50
Nickeled ... per doz 5·50 6·00 7·00
Premium (Coil)— Nos. 1 2 3
Japanned ... Per doz $7·50 6·25 5·00 } dis 30 %
Nickeled ... Per doz 11·00 9·50 8·00
Philadelphia ... 5 in., $5·00; 8 in., $7·00 dis 15 %
Barker's Concealed ... dis 15 %
Drawing Knives.
Crossman's No. 1 ... dis 60&5 %
D. R. Barton Tool Co ... dis 20 %
Douglass, Extra ... dis 60&5&10 %
Hart Mfg. Co., No. 1 ... dis 60&10&10 %
Merrill ... dis 60&10 %
Nobles Mfg. Co ... dis 15 %
Bradley's ... dis 25 %
Adjustable Handle ... dis 15 %
Witherby Tool Co ... dis 60&10 %
Drills and Drill Stocks.
Blacksmiths' ... each $2 50 dis 10 %
" Self-Feeding ... each $7 50 net
Breast, P. S. & W ... dis 45 %
Breast, Aiken's ... dis 25&10 %
" Hotchkiss ... dis 10 %
" Wilson's ... dis 10 %
" Miller's Falls ... each $2·50, dis 25 %
Ratchet, Merrill's ... dis 20 %
" Ingersoll's (old list) ... dis 35 %
" Whitney's ... dis 20 %
" Weston's ... dis 20 %
" Moore's Triple Action ... dis 20 @ 25 %
Wilson's Drill Stocks ... dis 10 %
Automatic Boring Tools ... each $2·75—dis 30 %
Drill Chucks.
Danbury ... each $8·00, dis 30 %
Morse's Beach Patent ... dis 30 %
" Adjustable ... each $10·00, dis 30 %
Egg Beaters.
Monroe's ... 8 in. 10 in.
Per doz $8·00 9·00 ... dis 10 %
Dover ... ℘ doz $5·00—dis 20 %
National ... ℘ doz $4·50—dis 20 %
Emery.
Genuine Chester—Regular Nos ... ℘ lb 6c } dis 10 %
" Flour and FF ... ℘ lb 4c
Washington Mills—Regular Nos ... ℘ lb 8c
" Flour ... ℘ lb 5c
Wellington Mills, Grain ... ℘ lb 10c. net
" " Flour ... ℘ lb 8c. net
Enameled and Tinned Ware.
Kettles ... dis 40 @ 50 %
Sauce Pans ... dis 30 @ 35 %
Glue Kettles ... dis 30 @ 35 %
Tinned Saucepans ... dis 30 @ 35 %
Escutcheons.
Door Lock ... Same discounts as Door Locks
Brass Thread ... dis 60&10 %
Wood ... dis 25 %
Faucets.
Fenn's ... dis 50 %
" Cork Stops ... dis 40 %
Star ... dis 55&10 %
Frary's Patent Petroleum ... dis 20&10 %
Wood and Metallic ... dis 40 %
Wood, Cork Lined ... dis 65&10 %
Enterprise Mfg. Co., Self-Measuring ... dis 20 %
Felloe Plates ... ℘ lb 15c; dis 25&10 %
Files.
American File Co ... $5 00 to £ currency—dis 25 %
Arcade File Works ... $5·00 to £ currency
Auburn File Works ... $5 00 to £ currency
Nicholson ... new list, Jan. 1, 1875, dis 12½ %
C. B. Paul's ... $5 00 to £ currency
Heller & Bros ... $5 00 to £ currency
Hiscox File Mfg. Co ... $5 00 to £ currency, dis 10 %
Johnson & Bro ... $5 00 to £ currency
Madden & Cockayne File Co ... $5 00 to £ currency
Jowitt's ... 4 50 to £ gold
J. & Riley Carr ... 5 00 to £ gold
" " Horse Rasps ... 5 00 to £ gold
Stubs' ... 7 50 to £ gold
Butcher's ... 4 50 to £ gold
Walter Spencer & Co.'s "Diamond" ... 4 50 to £ gold
Spear & Jackson's ... 5 00 to £ gold
W. K. & C. Peace's "Imperial" ... 5 25 to £ gold
R. Ibbotson ... 5 00 to £ gold
Fisher's ... 4 75 to £ gold
Moss & Gamble ... 4 75 to £ gold
Thos. Turner & Co. (Peter A. Frasse & Co.) 4 50 to £ gold
" " Horse Rasps ... 5 00 to £ gold
"Philo Sheffield," P. T. Co ... 5 00 to £ gold
Limet & Co. (French) ... 4 25 to £ gold
Fluting Machines.
Mrs. Coles' ... 5 in., $6·00; 7 in., $7·00, dis 25 %
" Pony ... 4 in., $4·75; 5 in. $5; 6 in. 5·50; 7 in. $6 dis 25 %
Mrs. Knox, No 1876 ... each $5·20, dis 20&10 %
Knox, 4 inch Rolls ... $3 25 each dis 10 %
" 6 " ... 3 80 each dis 10 %
" 8 " ... 5 60 each dis 10 %
Peerless, 4-inch Rolls ... 4 00 each net
" 5 " ... 4 75 each net
Improved Knox (Climax), 4 inch ... 2 65 each net
" " 6 " ... 3 15 each net
" " 8 " ... 4 90 each net
Champion, 6 inch rolls ... 6 00 each net
" 4 inch rolls ... 5 00 each net
Empire ... 4 00 each net
Eureka, No. 1, 7-inch Roll ... 6 75 each net
" No. 2, 5-inch Roll ... 5 00 each net
Defiance ... 4 in., $3·50; 6 in., $4·00; 8 in., $6·50 each net
K. F. M., 4½-inch Roll ... 3 50 each net
" 8-inch Roll ... 4 00 each net
Crown ... 4½ in. Roll, $3·75; 6 in., 4·00; 8 in., 5·25 each net
Domestic Fluter ... $1·50 each net
Geneva Hand Fluter ... $15 00 per doz net
Fluting Scissors ... dis 40&5 %
Forges.
Empire" (W. P. Kellogg & Co.) ... dis 20 %
Keystone Portable Forge Co ... dis 35 %
Forks.
Hay, Manure & Spading ... dis 35 %
Plated A 1 ... dis 40&5 %
" Reed & Barton ... dis 40&5 %
Fruit and Jelly Presses.
Enterprise Mfg. Co ... dis 20 %
Fry Pans.
Burnished, P. S. & W., new list ... dis 55 %
℘ doz ... $3·00 3·75 4·25 4·75 5·25 6·00 7·00 8·00 9·00
No. ... 0 1 2 3 4 5 7 8
Gauges.
Marking ... dis 45&10 %
" Star ... dis 35 %
Wire ... dis 10 %
" Smith's Patent ... per doz $18·00, dis 40 %
Gimlets.
Nail and Spike ... dis 25&10 %
"Bee" Gimlets ... per gross, $12·00, dis 45 %
Double Cut, Shepardson's ... dis 20 %
" " Hartwell's ... dis 40 %
" " Ives' ... dis 25 %
" " Douglass' ... dis 25&10 %
Glue Pots.
Tinned and Enameled ... dis 35 %
Family, Howe's "Eureka" ... dis 25 %
" L. F. & C.'s "Handy" ... dis 25 %
Grind Stone Fixtures
Sargent's Patent ... dis 70&10 %
Reading Hardware Co ... dis 70&10 %
Hart Mfg. Co.'s ... dis 60&5&10 %
Rick Bros ... dis 45&5 %
Hammers.
Emmet Hammer Co.'s Handled ... dis 25 %
" " Sledge & Stone. ℘ lb 40c.; dis 40 %
Humason & Beckley Mfg. Co ... dis 16⅔&10 %
Maydole's ... dis 12 %
Henry Hammonds' ... dis 12½ %
Cheney's ... dis 5 @ 7½ %
Verree ... dis 5 %
Magnetic Tack ... dis 25&10 %
Warner & Noble's ... dis 20 %
Hand Cuffs and Leg Irons.
Tower's Hand Cuffs, $4 00 per pair } dis 25 %
" Leg Irons $6 50 per pair
Providence Tool Co.'s Hand Cuffs ... $15 per doz } dis 10 %
" Leg Irons 25 "
Handles.
Door or Thumb Latches—
Nos. 0 1 2 3 4
Per doz $0·80 1·00 1·18 1·35 1·50—dis 60&10 %
Roggin's Latches ... 35c. @ 40c. net
Bronzed Iron Drop Latches ... per doz $1·00 @ 1·25 net
Wrought Chest ... dis 60&10 %
Surface Chest ... dis 65&10&10 %
Flush Chest ... dis 60&10&10 %
Lifting ... dis 60&10 %
Saw and Plane ... dis 25&10 %
Hammer and Hatchet ... dis 10 %
N. Carolina Handle Co ... dis 15 %
Brad Awl ... per gross $3 00, dis 10 %
Hickory Firmer Chisel, ass'td ... " 5 25 } dis 40 %
" " large " 6 50
Apple " ass'td " 6 00
" " large " 7 50
Socket " ass'td " 4 50
" Framing " " 7 00
File ... " 3 50
Auger ... " 6 50
" large " 8 00
Patent Auger, Ives' ... dis 25&10 %
" " Douglass' ... per set $1 25—dis 10 %
" " Swan's ... per set $1 00—dis 20&10 %
Hangers.
Barn Door ... dis 65&10 %
"Anti-Friction" No. 1, $1·25; No. 2, $1·50 ℘ pr ... dis 40 %
Novelty ... dis 40 %
Challenge ... dis 40 %
Climax No. 2 ... ℘ pair $1·25, dis 40 %
Harness Snaps.
Henshaw's ... List of 1½ changed to $14·00, dis 42½ @ 45 %
Judd's ... " " 14·00, dis 42½ @ 45 %
Fitch's (Bristol) " " 14·00, dis 42½ @ 45 %
Hotchkiss' ... dis 10 %
Andrews' ... dis 25 %
Sargent's ... dis 50&10 %
New York Wire ... dis 20&20 %
Hatchets.—Isaiah Blood ... dis 15 %
Shingling, Nos. 1 2 3 ... ℘ doz $7 25 8 00 8 75
Claw, " 1 2 3 ... ℘ doz 7 75 8 50 9 25
Lathing, " 1 2 3 ... ℘ doz 7 50 8 00 8 50
Hunt's ... dis 20 %
Shingling, Nos. 1 2 3 ... ℘ doz $7 25 8 00 8 75
Claw, " 1 2 3 ... ℘ doz 7 75 8 50 9 25
Lathing, " 1 2 3 ... ℘ doz 7 50 8 25 9 00
Hurd's ... dis 30&5 %
Shingling, Nos. 1 2 3 ... ℘ doz $8 00 8 50 9 00
Claw, " 1 2 3 ... ℘ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ... ℘ doz 8 00 8 50 9 00
Newark's Edge Tool Co.'s ... dis 25 %
Shingling, Nos. 1 2 3 ... ℘ doz $6 50 7 00 7 50
Claw, " 1 2 3 ... ℘ doz 7 25 7 75 8 25
Lathing, " 1 2 3 ... ℘ doz 6 50 7 00 7 50
Simmon's ... dis 25 %
Shingling, Nos. 0 1 2 3 ... ℘ doz $7 50 8 00 8 50 9 00
Claw, " 1 2 3 ... ℘ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ... ℘ doz 8 00 8 50 9 00
Broad, " 1 2 3 ... ℘ doz 9 00 10 00 12 00
" " 4 5 6 ... ℘ doz 14 00 16 00 18 00
" " 7 8 ... ℘ doz 20 00 22 00
D. R. Barton Tool Co ... dis 20 %
Shingling, Nos. 1 2 3 ... ℘ doz $11 00 10 50 10 00
Lath, " 1 2 3 ... ℘ doz 10 50 10 00 9 50
Half Hatchets, Nos. 1 2 3 ... ℘ doz 11 00 10 50 10 00
J. P. Verree & Co ... dis 5 %
Shingling, Nos. 1 2 3 ... ℘ doz $7 00 7 50 8 00
Claw, " 1 2 3 ... ℘ doz 7 50 8 00 8 50
Lathing, " 1 2 3 ... ℘ doz 7 00 7 50 8 00
Underhill's ... dis 10 %
Shingling, Nos. 1 2 3 ... ℘ doz 7 25 8 00 8 75
Claw, " 1 2 3 ... ℘ doz 7 75 8 50 9 25
Lathing, " 1 2 3 ... ℘ doz 12 00 11 00 13 00
M. H. Jones & Co ... dis 25 %
Shingling, Nos. 1 2 3 ... ℘ doz $8 00 8 50 9 00
Half Hatchets, Nos. 1 2 3 ... ℘ doz 8 00 8 50 9 00
Claw, Nos. 1 2 3 ... ℘ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ... ℘ doz 8 00 8 50 9 00
Broad, " 2 3 4 ... ℘ doz 11 00 13 00 14 50
" " 5 6 7 ... ℘ doz 16 50 18 00 19 50
Empire Hatchets, M. H. Jones & Co ... net
Shingling, Nos. 1 2 3 ... ℘ doz $4 75 5 00 5 25
Lath, " 1 2 3 ... ℘ doz 4 75 5 00 5 25
Half Hatchets, Nos. 1 2 3 ... ℘ doz 4 75 5 00 5 25
All pol. Sh'gling " 1 2 3 ... ℘ doz 5 25 5 50 5 75
Solid Steel Lath " 1 2 3 ... ℘ doz 7 25 7 50 7 75
Hay Knives.—"Lightning" ... per doz $30·00 net
Wadsworth's ... dis 25 %
Hinges.
Gate, Western ... ℘ doz $6·25—dis 60&10 %
" N. E. ... ℘ doz 11·25—dis 60&10&10 %
" N. Y. State ... ℘ doz 7·30—dis 60&10 %
Rolled Plate ... dis 65&10 %
" Raised ... dis 65&10 %
Wrought Strap and T ... dis 65 %
Providence Plate. { 6 to 10 in. 11c ℘ lb; over 10 in. 9½c ℘ lb } ... dis 40&10 %
Screw Hook and Strap ... { 8, 10, 12 in. 11 c; 14 to 36 in. 9½c } dis 40&10 %
Heavy Welded Hook ... { 8 to 12 in. 11 c; 14 in. & up, 9½c } dis 30 @ 40 %
Screw Hook and Eye ... { ⅝ to 1 in., 8½c; ⅜ in. 9½c; ¼ in. 11½c } ... net
Hoes.
Solid Shank, C. S ... ℘ doz $8 00—dis 35 %
Socket ... ℘ doz 9 00—dis 35 %
Riveted Eye ... ℘ doz 5 00—dis 30 %
Grub ... dis 25 %
Planters ... dis 15 @ 20 %
Scovill Pattern ... dis 10 @ 15 %
Lane's C. S. Cresent, American Pattern ... dis 15 %
" " " Scovil Pattern ... dis 10 %
Winsted Planters' Pattern ... dis 15 %
" Scovill " ... dis 10 %
Hooks.
Bird Cage ... dis 60&10 @ 70&10 %
Cotton ... dis 50 %
Belt ... dis 60&10 %
Bench—Hotchkiss' $5 00 ℘ doz ... dis 10 %
" Weston's No. 1, $8·00; No. 2, $7·00 per doz net
" McGill's ... $3 00 per doz, dis 10 %
" Skinner's ... per doz $6·25, dis 20 %
Clothes Line, Hart's list ... dis 60&10&5&10 %
" " Sargent's list ... dis 60&10&10 %
" " Reading list ... dis 33⅓&5&10 %
Ceiling. { Hart's list ... dis 60&10&10 %
Harness. { Sargent's list ... dis 60&5&10 %
{ Reading list ... dis 40&10 %
Coat and Hat, Hart's list ... dis 60&10&10 %
" " Sargent's list ... dis 60&10&10 %
" " Reading ... dis 40&10 %
Wrought Staples and Hooks and Staples ... dis 75 %
" " Stanley's list ... dis 40 %
Wire Screw Hooks and Eyes ... dis 65&10&10 %
Grass ... dis 25 %
Whiffletree—Patent ... dis 40 @ 45 %
Hooks and Eyes—Malleable Iron ... dis 60&10&10 %
" " Brass ... dis 60&10&10 %

Horse Nails.

Nos.		5	6	7	8	9	10
Ausable	℘ lb	30c	27c	25c	24c	23c	22c
" P't'd & Pol'd	"	31c	28c	26c	25c	24c	23c
" " & Blued	"	31c	28c	26c	25c	24c	23c
Cortland	"	29c	26c	24c	23c	22c	21c
Buffalo Forged	"	31c	28c	26c	25c	24c	23c
Globe, P't'd & Pol'd	"	31c	28c	26c	25c	24c	23c
National, Pointed and Polished, Pat. Fin	"	29c	25c	23c	22c	21c	20c
National, Pointed and Polished, Ex. Fin	"	30c	27c	25c	24c	23c	22c
Perkin's P't'd—Black	"	26c	23c	21c	20c	19c	18c
Perkins' Pointed and Polished	"	27c	24c	22c	21c	20c	19c
Perkins' Pointed and Blued	"	27c	24c	22c	21c	20c	19c
Putnam Hammer P't'd	"	32c	28c	26c	25c	24c	23c
Vulcan, P't'd & Blued	"	31c	28c	26c	25c	24c	23c

Star Brand, 16c.; Morgan ... 14c
Putnam ... 500 lbs., dis 5 %
Ausable, National and New London ... 1000 lbs., dis 5 %
Perkins' and Vulcan ... 1000 lbs., dis 7½ %
Perkins', Vulcan and Globe ... 500 lbs., dis 5 %
Horse Shoes.
Burden ... ℘ keg, $4·62½
R. I. Horse Shoe Co., Perkins' improved Light, Med. and Heavy ... ℘ keg, 4·62½
Mule Shoes ... ℘ keg, 5·62½
Perkins' Snow ... ℘ keg, 5·62½
The Boston Horse Shoe ... per keg $5·00
Boston Rolling Mills Hand Made ... ℘ lb 8c
Ice Awls, Chisels, &c.
American Ice Chisel ... per doz $6·50 net
National " ... per doz $6·50, dis 10 %
Novelty Ice Breakers ... per doz $6·50, net
White's Sliding Head Picks ... per doz $2·25, net
Dunlap's Ring Picks ... per doz $3·00, dis 25 %
Wood Head Picks, Sargent's ... per doz $1·85, dis 60&10 %
Iron " " ... per doz $1·85, dis 60&10 %
Ice Mallets, Pick in Head ... per doz $1·75 net
" " Pick in Handle ... per doz $3·00 net
Ice Axes, Small, Cast or Malleable ... per doz $1·50 net
Kettles.
Brass ... ℘ lb 45c net
Enameled ... dis 40 @ 50 %
Knives.
Ames' Butcher Knives ... dis 20 %
" Shoe " ... dis 15 %
" Bread " ... ℘ doz $1·50—dis 15 %
Hay and Straw, "Wadsworth's" ... dis 25 %
Table and Pocket ... See Cutlery
Knobs.
Carriage (Jap'd 80 cents per gross) ... dis 60&10 %
Base—Common ... net
" Plush Tip ... dis 10 %
" Elastic End, No. 8 ... dis 60 @ 60&5 %
Door, Mineral ... ℘ doz $1·75 } ... dis 35&5 % & 2 % for cash
" Por. Jap'd ... ℘ doz 2·25
" " Plated ... ℘ doz 6·25
" " Por ... ℘ doz 6·75
Furniture, Plain ... 75c gross inch, dis 10 %
Ladles.
Melting, Hart's ... dis 55&10 %
" Sargent's ... dis 50&10 %
" Reading ... dis 15&10 %
" Monroe's Patent ... per doz $4·00 dis 30 %
Lanterns.
Tubular ... No. 0, $11·00; No. 1, $14·00; With Guards, 50c. extra } dis 5 @ 10 %
Peerless ... No. 5, per doz $11·75—dis 10&10 %
Brady's Patent ... dis 10&10 %
Ætna ... dis 10 & 10 %
Yankee ... dis 10 & 10 %
De Beque ... dis 10 & 10 %
Police, Small ... per doz $7·50 net
Lard Presses.
Draw Cut, 14 inch ... each $65 00—dis 20 %
Enterprise Mfg. Co ... dis 20 %
Lemon Squeezers.
Porcelain Lined ... per doz $7 00, dis 15 %
Eureka, Tinned ... per doz, $10·00 dis 10 %
Dunlap's Improved ... per doz $6·00 net
Lines.
Linen Fish ... dis 20 %
Cotton Chalk ... dis 50 %
Sil. Lake Chalk ... Nos. 0, 1, 2, 3, $6, 6·50, 7, 7·50, dis 20 %
Mason's ... dis 20 %
Wire Clothes, Gal'd ... each 50c. net
Locks and Latches.
Cabinet—Gaylord { Special numbers ... dis 50&10 %
" Eagle { All others ... dis 25 %
Trunk " ... dis 25 %
Langstroth & Crane, Round Key ... dis 40 %
" " Flat Key ... dis 33⅓ %
Barnes & Deitz, Flat Key ... dis 25 %
Yale Lock Co., Flat Key ... dis 40 %
Sargent & Greenleaf, Flat Key ... dis 20 %
Continental ... dis 25 %
Shepardson's, Flat Key ... dis 35 %
American Lock Mfg. Co ... dis 33⅓ %
Plate ... new list dis 35&2 %
Trenton; Branford; Norwich; Russell & Erwin; Norwalk; Nashua; Mallory, Wheeler & Co.; P. & F. Corbin; Parker & Whipple; Jacobus & Nimick Mfg. Co. } List of July 1, 1876 ... dis 35&5 % ... and 2 % for cash
Padlocks, Russell & Erwin; " Mallory, Wheeler & Co.; " Wm. Wilcox & Co. } ... dis 35&5 % ... and 2 % for cash
" American Lock Mfg. Co ... dis 33⅓ %
" Romer's ... dis 15 %
" Vulcan Hardware Co ... dis 20 %
" New York Lock Co ... dis 20 %
" J. H. McWilliams ... dis 5 @ 10 %
" Barnes & Deitz ... dis 25 %
" Miller's Patent ... dis 40 %
" Penn Lock Works ... dis 25 %
" " " (Scandinavian) ... dis 50 %
Mallets.—Hickory and Lignumvitæ ... dis 20 %
Meat Cutters.
Dixon's (P. S. & W.) Nos. 1 2 3 4
℘ doz. $14 00 $17 00 $19 00 $30 00 dis 25 %
Miles Challenge ... Nos 1 2 3
℘ doz. $22·00 $30·00 $40 00—dis 30 %
Perry's (P. S. & W.) ... Nos. 200 300 400
℘ doz. $22·00 $27·00 $40·00—dis 25 %
Woodruff's (P. S. & W.) ... Nos. 100 150
℘ doz. $15·00 $18·00—dis 25 %
Hales' ... Nos. 11 12 13
℘ doz. $27·00 $33·00 $42·00—dis 40&2 %
Draw Cut ... Nos. 5 2 6 8 10
Each $50·00 $75.00 $80·00 $225 00 $400·00—dis 20 %
American ... dis 25 %
No. ... 1 2 2½ 3 4 B 5
Each ... $5·00 $7·50 $10·00 $12·00 $25·00 $50·00 $60·00
Molasses Gates.
Stebbins' Pattern ... dis 62½&10 %
" Genuine ... dis 60&10 %
" Tinned ends ... dis 40&10 %
Bush's ... dis 20 %
Lincoln's ... dis 50&10 %
Weed's ... dis 15 %
Mortars and Pestles.
Iron ... net
Nail Pullers.
Taft's ... per doz $24·00 net
Nails ... See Trade Report
Nuts and Washers.
Square and Hex., New List March 1, '76 ... 7c off list
Oilers.
Miller's Zinc, Brass and Copper ... dis 45 %
Sheet Metal Screw, Zinc, Brass and Copper ... dis 45 %
Olmsted's ... dis 25&10 %
Broughton's ... dis 25&10 %
Malleable ... per doz $5 00 dis 10 %
Prior's Patent or "Paragon" ... dis 45 %
Ox Balls ... dis 60&10 %
Pencils
Faber's Carpenters' ... net
" Round Gilt ... ℘ gross $6 00 net
Dixon's Lead ... ℘ gross $4·50 net
" Lumber ... ℘ gross 9·00 net
Picture Cord (Wire).
Tinned (Williams, White & Churchill) ... dis 80 %
Lacquered " " " ... dis 80 %
Gold Plated " " " ... dis 70 %
Picture Nails and Knobs.
Brass Head ... dis 60&10 %
Porcelain Head ... dis 60&10&10 %
Richards' Patent ... dis 40 @ 40&10 %
Judd's ... dis 60&10 %
Pinking Irons ... per doz $2 75—dis 65&10 %
Planes and Plane Irons.
First Quality ... dis 30&10 %
Second Quality ... dis 50 %
Bailey's Patent Adjustable ... dis 25&10 %
Bailey's "Victor" ... dis 25&10 %
Defiance Adjustable ... dis 25 %
D. R. Barton Tool Co ... dis 20 %
Plane Irons, Butcher's ... $5 50 to £ gold—new list
" Buck Bros ... $5 25 to £ gold
" Bailey's Patent ... dis 25&10 %
" Auburn Tool Co.'s ... dis 25 %
" Greenfield Tool Co ... net list
Plane Irons, Defiance ... new list dis 25 %
" D. R. Barton Tool Co ... dis 20 %
" Middletown Tool Co ... net list
" Ohio Tool Co ... dis 10 %
" Spear & Jackson's ... 5 00 to £ gold
" Sandusky Tool Co ... dis 10 %
Plow Bits, Greenfield Tool Co ... dis 10 %
Pliers and Nippers.
Button's Patent ... dis 33⅓ %
Hull's Patent Nippers ... No. 1, $15; No. 2, $21 ℘ doz dis 25 %
Leach's Patent Wire Cutters ... per doz $6 50—dis 15 %
Gas Pliers ... dis 25 %
Eureka Pliers and Nippers ... dis 25 %
Plumbs and Levels.
Stanley R. & L. Co.'s Pat. Adjustable ... dis 60&10 %
" " " Non-Adjustable ... dis 60&10 %
Chapin's ... dis 60&10 %
Standard Rule Co.'s New Adjustable ... dis 60&10 %
Standard Rule Co.'s Non-Adjustable ... dis 60&10 %
Johnson's Patent Adjustable ... dis 60&10 %
Davis' Patent ... dis 60&10 %
Pocket Levels ... dis 50&10 %
Pulleys.
Judd's Axle ... per doz $0·75 dis 40 %
Hot House and Tackle ... dis 60&10 %
Jap'd Screw ... dis 60&10 %
Brass Screw ... dis 60&10 %
Jap'd Side ... dis 60&10 %
" Clothes Line ... dis 60&10 %
Hay Fork ... per doz $4 50 @ 5 00, dis 10 %
Pumps.
Douglas Cistern, etc ... new list dis 25 %
" S. & F ... new list dis 20 %
Union Mfg. Co's. Cistern and Pitcher ... dis 25 %
" " " Rams ... dis 20 %
" " " Garden Engines ... dis 10 %
Punches.
Belt or Drive ... per doz $2·00; $2·25; $2·50 dis 30 %
Spring ... per doz $6·50—dis 25&10 %
" Leach's Patent ... dis 15 %
" Bemis' ... dis 20 %
Rail.
Sliding Door, Wrought Brass ... ℘ lb 40c. net
" " Iron, Painted ... ℘ foot 9c—dis 55&10 %
Barn Door, ½, ⅝ and ¾ inch ... dis 60&10&10 %
" " for N. E. Hangers ... dis 60&10&10 %
Rakes.
Cast Steel ... dis 35 %
$8 00 9 00 10 00 11 00
8 10 12 14 teeth.
Malleable ... dis 40 %
$5 00 5 50 6 00 6 50
9 11 13 15 teeth.
Razor Straps.
Evan's ... dis 40 %
Imitation Emerson ... ℘ doz $2·75—dis 40 %
Hunt's ... dis 40 %
Chapman ... dis 10 @ 15 %
Torrey's ... dis 10&10 %
Saunder's ... net @ 10 %
Rivets.
Iron and Tinned ... dis 60 @ 65 %
In bulk ... dis 40 @ 50 %
Copper Rivets and Burrs ... dis 20 %
Nos. 7 8 9 10 11 12 13 14 15
Per lb. 48c 50c 52c 54c 56c 58c 60c 65c 70c
Rivet Sets ... dis 10 %
Road and Levee Scrapers.
Doty's Revolving ... dis 25 %
Rods.
Stair ... dis 40&10 %
" American Patent ... dis 33⅓ %
Rollers.
Barn Door ... revised list dis 60, 10&10 %
Novelty ... dis 10 %
Rope. Manufacturers' List of Oct. 18, 1876.
Manila ... ⅝ inch and larger ℘ lb 15 c
" ... ⅜ inch ℘ lb 15½c
" ... ¼ and 5-16 inch ℘ lb 16 c
" Tar'd Rope ... ℘ lb 14½c
" Tar'd Lath Yarn ... ℘ lb 16 c
" Hay Rope ... ℘ lb 15 c
Sisal ... ½ inch and larger ℘ lb 11½c
" ... ⅜ inch ℘ lb 12 c
Sisal ... ¼ and 5-16 inch ℘ lb 12½c
" Hay Rope ... ℘ lb 11½c

Rules.	Boxwood.	Ivory.
Chapin's	dis 60&10 %	dis 50&10 %
Stanley	dis 60&10 %	dis 50&10 %
Standard	dis 60&10 %	dis 50&10 %
Stephens'	dis 60&10 %	dis 50&10 %
Willis, Thrall & Son	dis 60&10 %	dis 50&10 %

Sad Irons.
From 4 to 10 lbs ... ℘ lb 3 @ 3¼c net
Sad Iron, Nickel Stand attached ... ℘ lb 9c
Self-Heating ... per doz $9·38 @ 9·50 net
" " Tailors ... per doz $18·75 net
Mrs. Potts ... dis 20 %
Sand Paper.
Beader & Adamson's Flint, 00 to 1½ ... $4 25 ℘ ream } dis 15 %
" " " 2, 2½ & 3. 4 75 "
" " " Assorted. 4 25 "
" " Star ... ℘ ream $3 25
" " Emery ... ℘ ream $6 50 @ 11 50
New England, same list as B. & A. Flint ... dis 15 %
H. B. & M. Roman Flint " " " ... dis 15&5 %
Sash Cord.
Common ... ℘ lb 16 @ 18c. net
Patent ... ℘ lb 24c. net
Silver Lake, Russia Flax ... ℘ lb 55c } net
" " White Cotton ... ℘ lb 55c
" " Drab Cotton ... ℘ lb 60c
Raw Hide ... dis 25 %
Sash Locks.
Clark's, Nos. 1 and 2, $10·00 per gross ... dis 33⅓
Ferguson's ... dis 33⅓ %
Norwich ... dis 25 %
Walker's ... dis 10 %
New England ... dis 20 %
Hammond's Window Springs ... dis 25 %
Sash Weights.—Solid Eyes ... ℘ lb 1¼c
Sausage Stuffers or Fillers.
Miles ... ℘ doz $20—dis 30 %
Stow or Perry ... ℘ doz No. 1, $15; No. 0, $21—dis 30 %
Draw Cut No. 4 ... each $30 00—dis 20 %
Enterprise Mfg. Co ... dis 20 %
Saw Frames ... per gross $18 00—dis 15&10 %
Saw Rods ... $10 list, dis 10&10 %
Saws.
Spear & Jackson's ... $3 50 to £ gold
Disston's Circular ... dis 25 %
" Mill ... dis 25 %
" Cross Cut ... dis 15 %
" Hand, Panel, Rip, &c ... dis 15 %
H. W. Peace's Circulars ... dis 25 %
" Mill, Gang and Mulay ... dis 25 %
" Cross Cut, Wood, Hand, &c ... dis 20 %
E. M. Boynton's Lightning, Cross Cuts ... dis 50 %
" " One-Man, all lengths ... dis 40&10 %
" " Buck Saws (Cross Bar) ... per doz $8·50
" " Billet Webs ... per doz 6·00
" " Pruning ... dis 40&5 %
Wheeler & Clemson Mfg. Co.'s Hand ... dis 15 %
" " " " Cross-Cut ... dis 30 %
Livingston's Butcher and Kitchen ... dis 15 %
Livingston's Framed Wood—
Nos. 101 102 103 104 105 106
Per doz $12·00 10·00 12·00 9·00 8·00 6·00 dis 10 %
Saw Sets.
Stillman's Genuine ... ℘ doz $4·50—dis 5 %
" Imitation ... ℘ doz 3·25—dis 25 %
Common Lever ... per doz $2·00 dis 25 %
Leach's ... No. 0, $8·00; No. 1, $15·00 dis 15 %
Nash's ... No. 1, $8·50; No. 2, $5·50 dis 20&10 %
Hammer, Hotchkiss ... $5·50 dis 10 %
" Bemis & Call's ... dis 20 %
" Aiken's Genuine ... $14·00 dis 40 %
" " Imitation ... $7·00 dis 25&10 %
Scales.
Hatch, Counter ... ℘ doz $36—dis 25 %
" Tea ... ℘ doz $15—dis 40 %
Union Platform ... $6·00, $7·00—dis 40 %
Turnbull's ... dis 15 @ 20 %
Brown's ... dis 25&5 %
Fairbanks' ... dis 20 %
Howe's ... dis 20&5 %
Chatillon's Grocers' ... dis 25 %
" Eureka ... dis 20 %
Universal Family ... dis 25 %
Scale Beams.
No. 1 200 to 1200 lbs ... 40c ℘ cwt } dis ... 40 %
No. 2 " " ... 35c ℘ cwt
Scrapers.
Box, 1 Handle ... per doz $5·00, dis 10 %
" 2 " ... per doz 6·00, dis 10 %
Defiance Box and Ship ... dis 25 %
Foot ... dis 60 & 10 %
Ship (common) ... per doz $3 00 net
Ship—Providence Tool Co ... dis 10 %
Screw Drivers.
Hart, Bliven & Mead ... dis 55&10 %
Douglass Mfg. Co ... dis 25&10 %
" " No. 1 ... dis 20&10 %
Disston's ... dis 45 %
Stanley Rule & Level Co., No. 1 ... dis 30&10 %
" " " No. 2 ... dis 40&10 %
Screws.
Flat H'd Iron, list Sept. 1, '75, R.&E. Mfg. Co. dis 50&12½ %
" " " " Am. Sc. Co ... dis 52½ %
Round Head Iron " " ... dis 40 %
Flat Head Brass " " ... dis 52½ %
Round Head Brass " " ... dis 40 %
Brass and Silver Capped, List March 1, '75 ... dis 40 %
Lag or Common Coach, New List March 1, '76 ... dis 60 %
Coach, Patent Gimlet Point, List Jan. 1, 1875, dis 40 @ 50 %
Bed ... dis 5 @ 10 %
Japanned, List of Plain Screws of Sept. 1, 1875 ... dis 30 %
Machine—Flat Head, Iron, List Jan. 12, 1875 ... dis 25 %
" " Brass ... dis 15 %
Round Head, Iron ... dis 20 %
" " Brass ... dis 10 %

Nettlefold's Brass ... dis 60 @ 60& %
Bench—Iron ... dis 60, 10&7 %
" —Wood, Beach ... ₩ doz $3·00 et
" " Hickory ... dis 20&10 %
Hand ... dis 25&10 %
Hand Rail, Sargent's ... dis 55&10 %
" " Humason, Beckley & Co.'s ... dis 40&5 %
Jack—Bell Bottom ... dis 15 %

Scythes

Blood's German Steel, Grass ... ₩ doz $10 00 }
" Cast " " ... ₩ doz 11 00 }
" Silver " " ... ₩ doz 12 00 } dis $1·50 from list
" German " Grain ... ₩ doz 14 00 }
" Cast " ... ₩ doz 15 00 }
Blood's Excelsior and Granger ... ₩ doz 11 00 }
" Young America ... 10 50 } dis $1·50 from list.
" Silver Clipper ... 13 00 }
Wadsworth's Grass ... dis 30 %
" Bush ... dis 20 %
Scythe Snaths ... dis 20 %

Shears and Scissors.

Cast Steel ... dis 75&10 %
Cast Iron ... dis 40 %
Seymour's Straight Trimmers ... dis 60&10 %
" Scissors ... dis 50 %
Pruning ... per doz $$5·50 @ 6·00, net
Barnard's Lamp Trimmers ... per doz $3·75

Sheaves.

Sliding Door, M. W. & Co. list ... dis 35&5&2 %
" R. & E. list ... dis 50&5&2 %
" Patent Roller ... dis 25&2 %
" " " Hatfield's ... dis 50&2 %
" Russell's Anti-Friction ... dis 50&2 %
Sliding Shutter, R. & E. List ... dis 30&5&2 %
" " Sargent's List ... dis 55&10 %

Shovels and Spades.

Ames ... dis 25 %
Rowland's ... dis 25 %
Old Colony ... dis 25 %
Middleboro' Shovel Co. ... dis 25 %
Dunning's Shovels and Scoops ... dis 20&7½ %

Shovels and Tongs.

Iron and Brass Head, R. & E. list ... dis 50&10&2 %
" " Hart's ... dis 55&2&10 %
Polished Steel ... dis 50&10&2 %

Slates.

Square Frames, Round Cornered, by case ... dis 70 %
Less than a case ... dis 65&10 %

Spokes.

North Carolina Handle Co. ... dis 20 %

Spoke Shaves.

Defiance Metallic ... new list dis 25 %
Iron ... dis 33⅓&10 %
Wood ... dis 30 %
Bailey's ... dis 25&10 %

Spoke Trimmers.

Bonney's ... per doz $10·00 dis 40 %
Stearn's ... per doz $10·00 dis 40 %
Ives' ... No. 1, $15·00; No. 2, $12·00 ₩ doz, dis 33⅓&10 %
Douglass' ... per doz $9·00 dis 20&10 %

Spoons.

Tinned Iron ... dis 15 %
By the case ... dis 20 %
Basting ... dis 15 %
Britannia ... dis 55 @ 60 %
" Boardman's, new list ... dis 55 %
Rogers & Bro., A 1 ... dis 40&5 %
Reed & Barton ... dis 40&5 %
Derby Silver Co. ... dis 40&5 %
Holmes, Booth & Haydens ... dis 40&5 %
Nickel Silver Co. ... dis 30 %
German Silver ... dis 30&5 %
Tin (P. S. & W.)—
Teas ... $1·50 ₩ gross, net
Tables ... 2·75 " net
Tin (Cowles Hdw. Co.) ... dis 10 %
" " " case lots ... dis 20 %

Stencil Combinations—Stafford Mfg. Co.—

Inch	½	¾	1	1¼	1½	2	2½
Per doz	$6·00	6·50	7·00	9·00	10·00	12·00	18·00

Stocks and Dies ... dis 5&10 %

Stone.

Hindostan Stone ... ₩ ℔ 6c }
" Axe Stone ... ₩ ℔ 8c } dis 20&10 %
" Slips ... ₩ ℔ 10c }
Sand Stone ... ₩ ℔ 6c—dis 20&10 %
Washita Stone ... No. 1, ₩ ℔ 30c net
" ... No. 2, ₩ ℔ 25c net
" Slips ... No. 1, ₩ ℔ 60c net
Arkansas Stone ... No. 1, ₩ ℔ $1·35 net
" Slips ... No. 1 ₩ ℔ $2·50 net
Grindstones, Family, Loring's ... dis 10 %

Stove Polish.

Joseph Dixon's ... ₩ gross, $6·00 dis 5 %
Gem ... ₩ gross $4·50 dis 5 %
Gold Medal ... ₩ gross $6 00 dis 25 %
Rising Sun ... per gross $5·75 net

Squares.

Steel ... dis 50 %; full cases, dis 50&10 %
Iron ... dis 50 %; full cases, dis 50&10 %
Nickel Plated ... add $2 50 @ $4 00 ₩ doz net
Try Squares and T Bevels ... dis 45&10 %
Star Try Squares and Bevels ... dis 35 %
Disston's Try Squares No. 1 ... dis 30 %
" " No. 2 ... dis 45 %
" " Improved, Nos. 1 & 2 ... dis 30 %
Winterbottom's Try and Mitre ... dis 20&10 %

Tacks, Brads, &c.—List of January 1, 1876.

Tacks, Half Weight, American ... dis 75& }
" Full " ... dis 50& }
" Half " Swedes ... dis 65& }
" Full " ... dis 30& } dis 10 % for cash
" Carpet, Am. and Swedes ... dis 10& }
" Leather Head ... dis 10& }
" Copper ... ₩ ℔ 45c. dis }
Brads, Half Weight ... dis 50& }
Shoe Nails—
4-8ths and longer, 9c.; 3½-8ths, 9½c. ℔ ℔, dis 10 %
Trunk, Clout and Finishing Nails—

⅝	⅞	¾	⅞	1	1⅛ in. and over.
25	20	17	15	13	11c. ₩ ℔, dis 10 %

Double Pointed Tacks ... dis 40&5 %

Tap Borers.

Common and Ring ... dis 20&10 %
Ives' Tap Borers ... dis 10&10 @ 25 %
Enterprise Mfg. Co. ... dis 20 %

Tapes, Measuring.

American Flask and Cap Co. ... dis 20 %
Eddy's ... dis 20 %

Tea Trays.

American Tea Tray Co. ... dis 15 %

Thermometers.

Tin Case ... dis 60&5 %

Toe Calks.

Winsted ... ₩ ℔ 13c., dis 20 %

Tobacco Cutters.

Enterprise Mfg. Co. (Champion) ... dis 20 %
Wood Bottom ... per doz $12—dis 30&10 %
All Iron ... per doz $1?·50—dis 40&5 %
Nashua Lock Co.'s ... per doz $18 00—dis 50 %

Tinners' Tools and Machines.

P. S. & W. ... dis 10 %

Traps.

Game, Newhouse ... dis 25&2 %
" Peck, Stow & Wilcox ... dis 40 %
" Hotchkiss ... old list dis 40 %
" Blake's Patent ... dis 30 %
Mouse, Wood Choker ... ₩ doz holes, 15 @ 16c
" Patent Choker (Union Nut Co.) ... ₩ doz holes 16 @ 18c net
" Round, Wire ... ₩ doz $1 50 to 2 00 net
" Square, " ... ₩ doz 2 00 to 2 50 net
" Cage ... ₩ doz 2 50, dis 10 %
" Patent Self Setting ... per doz holes 25c net
" Catch-em-alive ... ₩ doz $4·00 net

Trowels.

Lothrop's Brick and Plastering ... dis 10 %
Disston's Brick and Plastering ... dis 15 %
Peace's Plastering ... dis 20 %
Rose's Brick ... dis 5 %
Brades' Brick ... gold, dis 10 %
Worrall's Brick and Plastering ... dis 25 %
Garden ... dis 25 %

Triers.

Butter and Cheese ... dis 25 %

Ventilators (Window).

Nickel and Gilt ... per dozen $16·00 @ 18·00

Vises.

Solid Box, Trenton ... 49 to 160 lbs., 12½c. net
" " Wilson's ... 30 to 160 lbs., 18c } dis 30 %
160 and over, 22c }
" " Peter Wrights ... 16c gold
Parallel, Parker's ... dis 2? %
" Wilson's ... dis 30&10 %
" Sargent's ... dis 55&10 %
" Trenton ... dis 20 %
" Backus and Union ... dis 25 %
" Merrill's ... dis 15 %
" Fisher & Norris ... dis 15&10 %
" Buffalo ... dis 25 %
" Stevens' ... dis 25 %
" Simpson's Adjustable ... dis 20 %
Saw Filers, Bonney's ... per doz $20·00 dis 25 %
" Stearn's ... per doz $20·00 dis 25 %
" Hopkins' ... per doz $17·50 dis 10 %

Wheel Barrows.

Canal (Pugsley & Chapman) ... new list dis 30 %
Coal, Garden and Stone (Pugsley & Chapman) ... dis 30 %
Jacob's Pat. Self-Oiling R. R. and Canal ... dis 25 %

Well Wheels.

Revised list ... dis 60&10 %

Wire.

Brass and Copper ... List of Oct. 27, 1875 net
Bright and Annealed ... Nos. 0 @ 18 dis 50 @ 52½ %
" " ... 19 @ 26 dis 55 @ 57½ %
" " ... 27 @ 36 dis 57½ @ 60 %
Coppered ... 0 @ 18 dis 45 @ 47½ %
Galvanized, Nos. 0 to 6 ... ₩ ℔ 8 @ 8½c net
Galvanized, Nos. 7 to 18 ... market list dis 20 %
Tinned, Nos. 0 to 18 ... dis 30 @ 32½ %
Cast Steel ... dis 15 @ 20 %
Tinned Broom Wire, Nos. 18 to 25 ... dis 40 @ 42½ %
Galvanized Telegraph, Nos. 8 and 9 ... ₩ ℔ 9c
Galvanized Telegraph, Nos. 10 and 11 ... ₩ ℔ 10c
" " 12 ... ₩ ℔ 10½c
Annealed Fence, Nos. 8 and 9 ... dis 52½ %
" Grape, " 10 to 14 ... dis 52½ %
Fence Staples ... ₩ ℔ 7½ @ 8c
Fence Staples Galvanized ... ₩ ℔ 10c
Stubs' Steel Wire ... $7 00 to £ gold
Japanned Barb Fence ... ₩ ℔ 15c
Galvanized " ... ₩ ℔ 18c
Steel Music Wire, Nos. 12 to 27 ... ₩ ℔ 10c
Judd's Picture Wire ... dis 50 %
Clothes Line Wire ... per coil 50c. net

Wrenches.

American Adjustable ... dis 45 %
Baxter's Adjustable "S" New List, May 1, '76 ... dis 20 %
" Diagonal " " ... dis 20 %
Collins & Co.'s ... dis 45 %
Coes' Genuine ... dis 40&10 %
" Pattern (Wrought) ... dis 50&10 %
" " (Malleable) ... dis 50&10 %
Diamond Hardware Co. ... dis 40 %
Hull & Belden's "Climax" ... dis 25 %
Lindsay's Patent ... dis 25 %
Taft's Pattern ... dis 70&5&10 %
Davis Patent Duplex ... new list dis 25 %
Bemis & Call's Patent Combination ... dis 20&5 %
" " Merrick's Pattern ... dis 25&2½ %
" " Brigg's Patent ... dis 20&5 %
Aiken's Pocket (Bright) ... per doz $10·00—dis 50&10 %

Wringers.

	Less than 2 doz	2 doz lots
Providence, with Cog Wheels	$72·00	$70·00
Household, without "	60·00	58·00
Universal, "	60·00	58·00
" with	72·00	70·00
Eureka, without "	60·00	58·00
Novelty, "	$60·00	$58·00
" with "	72·00	70·00
Sherman, "	72·00	70·00
" without "	60·00	58·00
Reliance, with "	69·00	67·00
Excelsior Bench Wringers	90·00	87·00
" for Set Tubs	82·00	79·00
Crown No. 2	60·00	58·00

Stamped Tin Ware.

Common Stamped Ware ... dis 10 %
Stamped Deep and Retinned Ware ... dis 20&10 %
Japanned Tin Ware ... dis 5 %
Planished Tin Ware ... dis 20 %

METALS.

IRON.—Duty Bars, 1 to 1¼ cents per lb., Sheet, Band, Hoop and Scroll, 1½ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron—American.

Foundry No. 1 ... ₩ ton, $21 00 @ 22 00
Foundry No. 2 ... " 19 00 @ 20 00
Gray Forge ... " 19 00 @ 20 00

Scotch.

Coltness ... " 28 50 @ 29 00
Glengarnock ... " 27 00 @ 28 00
Eglinton ... " 26 00 @ 25 50

Bar Iron.

Am. Refined, at mill ... 2·25c. @ 2·35c.

Rails.

Iron, at mill ... ₩ ton $37 00 @ 40 00
Steel, " ... " 50 00 @ 52 00
Old Rails ... " 20 00 @ 21 00

Scrap.

Wrought Scrap, from yard ... " 27 00 @ 28 00

Bar Iron from Store.

Common Iron.
⅜ to 2 in. round and square ... }
to 6 in. x ⅜ to 1 in ... } ₩ ℔ 2·2c
Refined Iron.
⅜ to 2 in. round and square ... }
1 to 6 in. x ⅜ to 1 in ... } ₩ ℔ 2·5c
1 to 6 in. x ¼ and 5-16, and 1 to 6 in. x 1½ to 2 ... ₩ ℔ 2·7c
Rods—⅝ and 11-16 round and square ... ₩ ℔ 2·6c
Bands—1 to 6 x 12 to 3-16 ... ₩ ℔ 2·9c
Swedish Iron.
Ordinary sizes ... 130 00 @ 132 50
Plow size ...

Sheet Iron.

	Common American.	R. G. American.
Nos. 10 to 20	₩ ℔ 3½	4½c
21 to 24	" 3¾c	4¾c
25 to 26	" 4 c	5 c
27	" 4 c	5¼c
28	" 4½c	5½c

Galvanized, 14 to 20, prime, ₩ ℔ 8½c; 2d quality ₩ ℔ 7½c
" 21 to 24 " " 9 c " ... " 8 c
" 25 to 26 " " 9½c " ... " 8½c
" 27 " " 10½c " ... " 9½c
" 28 " " 11½c " ... " 10 c
Patent Planished ... A, 12c.; B, 10c. ₩ ℔
Russia, Nos. 8 to 16 ... ₩ ℔ 12½ @ 13c
" Stained, No. 1 ... " 12c
Belgian ... " 10c
One piece Corrugated Sheet Iron Elbows.

Charcoal Iron.

⅝	5	5½	6	7 inch.
$2·50	3·50	4·50	5·25	6·50 per doz.

Russia Iron.

1½	5	5½	6	7 inch.
5·00	7·00	9·50	12·00	14·00 per doz.

COPPER—Duty. Pig, Bar and Ingot, 5c.; old copper, 4 cents ₩ ℔; Manufactured (including all articles of which copper is a component of chief value) 45 % ad valorem.
American Ingot ... ₩ ℔ 20 @ 20½c
English " ...

Sheathing, Braziers Copper, Bolts, &c.

Braziers Copper, ordinary sizes, over 16 oz., per square foot ... 32c ₩ ℔
Braziers Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot ... 34c. "
Braziers'Copper, 12 oz. per square foot ... 36c. "
Circles less than 84 inch in diameter ... 35c
Circles, 84 inch diameter and over ... 38c. "
Segment and Pattern Sheets ... 35c. "
Locomotive Fire Box Sheets ... 32c.
Sheathing Copper, over 12 oz. per sq. ft ... 31c. "
" 12 oz. ₩ sq. ft. and lighter ... 36c. "
Bolt Copper ... 33c.
Copper Bottoms, 33c. ₩ ℔ ... net
No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.
Sheathing Copper, tinned on one side, by the case ... 6c. ₩ sheet
For less than a case ... 8c ₩ sheet
Tinning Sheets, ordinary sizes ... 2½c. ₩ sq. ft
For tinning both sides, double the above amount.

O'Neill's Patent Planished Copper.

14x48.
14 and 16 oz. and heavier ... 37c. By the case, 36c. ₩ ℔
12 oz. and lighter ... 40c. " " 39c. "
Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60
14 and 16 oz. and heavier ... 39c. By the case, 38c. ₩ ℔
(And all sizes not over 20 inches wide.)
30x60
14 and 16 oz. and heavier ... 41c. ₩ ℔
12 oz ... 44c. "

Brass.

Brown & Sharp's Gauge the Standard except for Fine Wire.

Brass Manufacturers' Price List.

October 27th, 1875.

Net cash prices for Roll and Sheet Brass Wire, &c., for quantities of 100 pounds and over at one time. For less than 100 pounds, three cents additional.

High Brass

All Nos. to No. 28, and widths 14 in. and under ... 27c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive ... 30c
Over 20 in. to 30 in., inclusive ... 33c
½c. ₩ ℔ advance on each No. above Nos. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass, at ... 45c
Sheets 24x48 in. and all sheets cut to particular sizes and lengths ... 33c
Printers' Rules ... 40c
Sheets wider than 30 in. and under 40 in ... 40c
" " 40 in. and over ... 42c
Circular sheets, in diam. from 4 in. to 14 inclusive ... 37c
" " " over 14 " 20, " ... 40c
" " " " 20 " 30, " ... 43c
" " " " 30 " 40, " ... 46c
" " " " 40 in ... 49c

Low Brass.

Four cents ₩ ℔ more than High Brass.
Gilding Metal 7c, ₩ ℔ more than High Brass.
Platers' or Gold Metal } In Bars ... 42c
} Sawed ... 45c
} Planed or Polished ... 48c

For Slitting.

Metal, in width 2 in. to ⅛ in. to No. 30, inclusive, 1c. per ℔. advance.
Metal, in width 2 in. to 1 in., thinner than No. 30, 2c. per ℔. advance.
Metal, in width 1 in. to ⅛ thinner than No. 30, 3c. per ℔. advance.
Metal, in width ⅛ in. to ¼, to No. 30, 2c. per ℔. advance.
Metal, in width ⅛ in. to ¼ thinner than No. 30, 5c. per ℔. advance.
Metal, ¼ in. in width and less, 10c. per lb. advance

German Silver Market Metal and Wire

	Market Metal.	Wire.
4 per cent., 12 in., to No. 26	$0·60	$0·80
6 " " "	·70	·90
10 " " "	·80	1·10
15 " " "	1·00	1·35
18 " " "	1·10	1·50
20 " " "	1·20	

German Silver Sheets over 12 in. wide, and weighing more than 16 ℔s., $2 per ℔., net.

Advance 2c. for each additional in., in width above 12 in., and 2c. per ℔. on each No. thinner than Nos. 26 to 36 inclusive.

All German Silver thinner than No. 36 is Platers' at 50c. per ℔. additional.

German Silver Scrap one-third less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

Brass and Copper Wire.

	High Brass.	Low Brass.	Gild'g and Cop'r.
Nos. 0 to 20	0·30	0·34	0·40
Nos. 21, 22, 23	0·31	0·35	0·42
Nos. 24 and 25	0·32	0·36	0·43
Brass Rods, No. 8 and larger	0·36	0·40	0·46
Wire straightened and cut, smaller than No. 8	0·40	0·44	0·50

Fancy Wire not less than 4 cents per pound advance of Round Wire.
Spring Wire, 2 cts. per lb. advance.

Fine Wire, by the Old English Fine Wire Gauge.

	High Brass.	Low Brass.	Gild'g and Cop'r.
No. 26	0·41	0·45	0·51
No. 27	0·44	0·48	0·54
No. 28	0·46	0·50	0·56
No. 29	0·48	0·52	0·58
No. 30	0·50	0·54	0·62
No. 31	0·52	0·56	0·66
No. 32	0·56	0·60	0·71
No. 33	0·60	0·64	0·81
No. 34	0·64	0·68	0·91
No. 35	0·69	0·73	1·03
No. 36	0·78	0·82	1·15
No. 37	0·98	0·98	1·28
No. 38	1·28	1·28	1·58

Ten cents per pound extra for Spooling.

Tubing. ₩ ℔

Plain to No. 20 inclusive, above ¼ in. to 3 in ... $ ·44
" above 3 in ... ·50
Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cents advance on List for each Number.
Above No. 26, special rates.
Plain ¼ inch ... ·75
" 3-16 " ... 1·10
" ⅛ " ... 1·60
All Mandrel Drawn Tubes, 5 cents advance on List Prices.
Fancy Tubing, 4 cents advance on List above Plain.
English, Scotch and Extra Patterns Fancy Tubing to No. 20, 9 cents above Plain.
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.
Add to 2 cents ½ cent for each additional cutting under two feet.
All Mandrel Drawn Tubes under ⅜ in., 25 cents per pound advance.

Zinc Tubing.

Plain ... ·28
Fancy ... ·31
Scotch and Extra Patterns ... ·34

German Silver Tubing

4 Per cent ... ·85
6 " ... ·95
9 " ... 1·10
12 " ... 1·25
15 " ... 1·40
16 Per cent ... 1·45
18 " ... 1·55
20 " ... 1·65

Miscellaneous.

Common Plain Brass Pail Ears ... ·39
Hose Pipes, 500 and over ... ·71
" under 500 ... ·76
Door Rail ... ·40

Scrap.

High Brass Scrap, 16 cents.
Low " 18 cents.
Gilding, 20 cents.
Turnings, Filings and Chips, half the price of Scrap.
Orders for Goods on this list received on or after this date, will be filled at the rate herein stated.
Terms—Net cash. No discount allowed. Interest to be added after thirty days.

ANTIMONY ... 16c. currency

LEAD—Duty: Pig $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb.
Spanish ... 6⅝ @ 6¾c gold
German Refined ... 6⅝c gold
English ... 6⅞ @ 7c gold
American ... 6¼ @ 6½c gold
Bar ... dis 10 % ... 8½c
Pipe ... dis 10 % ... 9½c.
Tin Lined Pipe ... dis 10 % ... 16½c.
Sheet ... dis 10 % ... 10c.
Shot ... dis 10 %. Drop, 9½c. Buck, 10½c.

Babbitt Metal.

N. P. U ... ₩ ℔ ½ @ 9c
A., 25c.; B, 20c.; C, 15c.; D, 12c. ₩ ℔.

STEEL—Duty: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2¼ cents; over 7 cents, and not above 11, 3 cents per lb. over 11, 3½ cents per lb. and 10 % ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.

Tool ... 15 @ 16c
Spring ... 10c
Homogeneous ... 12½c
Tire ... 12½ @ 13½c
Machinery (round and square) ... 10 @ 11c
File ... 11c
Sheet ... 14 @ 16c
Saw Plate, mill and mulay ... 14 @ 16½c
Saw Plate, gang and X cut ... 13 @ 14c
" circular as to size ... 18 @ 30c

Chrome Steel.

Tool ... ₩ ℔ 20 @ 21c
Tool, extra fine ... " 40 @ 75c
Spring ... ₩ ℔ 12c and upward
Machinery ... ₩ ℔ 14c
Hammer ... " 15c,
Gun or Homogeneous ... " 16c

English Steel. payable in gold, net.

" Best Cast ... ₩ ℔ 17½c
" Extra Cast ... " 18½c
" Round Machinery, Cast ... ₩ ℔ 10½ @ 11½c
" Swaged, Cast ... " 19½c
" Best Double Shear ... " 17½c
" Blister, 1st quality ... " 14½c
" " 2d quality ... " 13 c
German Steel, Best ... " 11½c
do 2d quality ... " 10½c
" 3d quality ... " 9½c
Sheet Cast Steel, 1st quality ... " 17½c
" " 2d quality ... " 14½c
" " 3d quality ... " 12½c
File Steel, Flat and ½ Round ... " 12½c
" Square and Round ... " 12½c
" Mill ... " 13½c
" Taper to 4 inch ... " 16c
" Taper 3 and 2½ inch ... " 18c

SOLDER ... No. 1, 18c.; No. 2, 12½c

SPELTER—Duty: In Pigs, Bars and Plates, $1 50 per 100 lbs.
Silesian, cash ... 6⅞ @ 7c., gold
American " ... 7⅞ @ 11c., currency

TIN—Duty: Plates, Sheets, Tagger and Terne, 1·1c. per lb.; Electro-galvanized Plates, 2 cents per ℔; Manufactures of, not enumerated, 35 per cent. ad val. Bars, Block and Pigs, free. Banca, subject to duty of 10 per cent.
Banca ... ₩ ℔ 23c., currency
Straits ... ₩ ℔ 21c., currency
English ... ₩ ℔ 21c., currency

Tin Plates, Currency Prices.

I C 10x14 } 12x12 } 14x20 } Prime Charcoal ... 8·25 @ 8·50
I X 10x14 } 12x12 } 14x20 } Prime Charcoal ... 10·50 @ 10 75
D C 12½x17 " ... 7·75 @ 8·00
D X 12½x17 " ... 10·25 @ 10·50
For each additional X add ... 2·25

Coke Tin Plate.

	Best.	2d quality.	Ordinary.
I C 10x14, I C 12x12, I C 14x20	7·75 @ 8·00	7·50	6·75 @ 7·00

Terne Plate

	Prime Char.	2d qual.	Coke.
I C 14x20	$7·50 @ 7·75	7·00 @ 7·25	6·50 @ 7·00
I X 14x20	9·75		
I C 20x28	15·50	14·50 @ 15·00	14·00 @ 14·50
I X 20x28	20·00		
I C 20x20	21·75		
I C 14x20 M F. Brand			$8·50

ZINC.—Duty: Pig or Block, $1 50 per 100 lbs. Sheet 2½c. ₩ ℔.
Sheet ... cask 9c
" ... open 9½c

Paper Stock, Old Metals, &c.

(Dealers' Selling Price.)

Canvas linen ... 6 @ 6¼
" cotton, No. 1 ... 6¼
" " No. ... @ 3½
White linen rags, No. 1 ... 5¾ @
" " No. 2 ... 4½ @
Colored ... 2⅝ @
Mixed woolens ... 2½ @ 3½
Soft woolens ... 5½ @ 6
Gunny bagging ... 2 @ 2½
Jute Butts ... 2¼ @ 2⅜
Kentucky bagging ... 5½ @ 5½
Waste paper and scraps ... 1 @ 1½
Rope cuttings ... 1½ @ 3
Kentucky Bale rope ... 4 @ 4½
Oakum junk, No. 1 ... 5½ @ 5⅞
" No. 2 ... @ 4
Grass rope ... 3⅞
Tarred Shaking ... 2
White Collar Cuttings, all paper ... 7 @
" " " muslin lined ... 5 @
" Envelope ... 7 @
Hard White Shavings, No. 1 ... 6½ @
Soft " " No. 1 ... 6 @
White Shavings, No. 2 ... 5½ @
Mixed Shavings, part white ... 4 @ 4½
Imperfections, No. 2, best folded sheets ... 5 @
" 1, Heavy Stock ... 4½ @
Book Stock, Mixed ... 4 @
" " No. 2, light ... 2½ @ 2½
Newspaper Stock ... 3
Prints ... 1½ @ 2
Pure Manilas ... 2½
Bogus Manilas and Hardwares ... 1 @ 1½
Commons ... 1 @
Binders' Board Cuttings ... 1½ @
Straw Board Cuttings ... 1½ @
Woolen Tailor Clips ... 13 @ 14
Satinet Tailor Clips ... 2 @

Old Metal.

Copper ... @ 17½
Yellow metal ... 13½ @
Brass, light ... 10
Brass, mixed ... 10½
Heavy Composition ... 14½
Old lead, solid ... 5⅞ @ 6
Tea lead ... 5½
Zinc ... @ 4½
Pewter, No. 1 ... 14
" No. 2 ... 9 @ 10
Spelter ... @ 6½
Wrought Iron ... per ton $28·00
Machinery Iron ... per ton $14·00
Light Iron ... per ton $11·00
Stove plate ... per ton $12·00
Burnt Iron ... per ton $5·00

Paints, Oils, etc.

Paints.

Black lamp—Coach Painters ... ₩ ℔ 20c
" " Ordinary ... 6c
" Ivory Drop, fair ... 15c
" " best ... 26c
Black Paint, in oil ... kegs, 8c.; ass't'd cans, 11c
Blue, Prussian, fair to best ... 50 @ 75c
" " " " in oil ... 35 @ 65c
" Chinese dry ... 85c
" Ultramarine ... 25 @ 30c
Brown, Spanish ... 1¼c
" Van Dyke ... 9c
Carmine, 40 ... $12 00
Green, Chrome ... 15 @ 23c
" " in oil ... 18 @ 25c
" Paris ... good, 30c; best, 40c
" " in oil ... 30c 45c
Mineral Paints ... 1½ @ 4c
Orange Mineral ... 14c
Red Lead, American ... 9½c
" " English ... 10½ @ 11c
" Venetian (N. C.) dry ... 2½c
" " in oil ... ass't'd cans, 11c; kegs, 8½c
" Indian, dry ... 10c
Rose Pink ... 13c
Sienna, American, Raw ... 4c
" Burnt ... 4½c
" " in oil ... 16 @ 26c
" Raw " ... 15 @ 25c
Umber, Burnt ... 4 @ 8c
" " in oil ... 16 @ 21c
" Raw ... 3½ @ 7½c
" " in oil ... 16 @ 22c
Vermillion, Chinese ... 1 05, gold
" English ... 72½c, gold
" Trieste ... 1 10
" American, Common ... 23c
White Lead, American, pure dry ... 10c
" " in oil ... 10½c
White, Paris, English, prime ... in bbls. 2½ @ 2½c
Yellow Ochre, French ... 2½ @ 2½c
" " " in oil ... ass't'd cans, 11c; kegs, 8½c
" " Vermont ... in casks 1½c
Yellow Chrome ... 17 @ 27c
" " in oil ... 18 @ 28c
Zinc White, American No. 1 dry ... 9c
" " 1, in oil ... 11c
" French (Paris) ... 11c
" " in oil ... 12c

Oils.

Linseed Raw ... ₩ gal. casks, 60c. bbl., 61c
" Boiled ... " 65c. " 66c
Whale, Crude ... "
" Bleached Winter ... " 75c
Sperm, Crude ... " 1 60
" Winter, unbleached ... " 1 80
" " Bleached ... " 1·70
Seal, Extra Refined ... "
Lard, Pure Winter ... " 90
" Spring ... " 88
Cotton Seed, Crude ... " 62c
" Southern Yellow ... " 67c
" White ... "
Neatsfoot, Winter ... 70c @ $1·10
Natural Lubricating ... 28c @ 40c

Sundries.

Asphaltum ... 9c
Benzine ... ₩ gal. 16c
Chalk ... ¾c
" Block ...
Dryer, Patent, Am'n ... ass't cans, 10½c.; kegs, 9c
" " English ... " 11c.; " 9c
Flocks ...
Frostings ... 50c
Glue, White ... 38 @ 44c
" Sheet ... 20c
Glaziers' Points, Zinc ... 90
Gum, Copal ... 30c
" Damar ... 25c
" Shellac, English ... 55c
" " " dark ... 50c
Litharge ... 9½c
Pumice Stone, selected Lumps ... 4 @ 6c
" powdered ... 4c
Putty in bladders ... 3½c
" in bulk ... 3c
Rotton Stone, soft, English ... 8c
Spirits Turpentine ... 37c
Whiting Spanish ... ⅞c

Glass.

French Window Glass.

Prices current per box of 50 feet.

Single Thick.

Sizes.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$ 7·50	$ 6·75	$ 6·25	5·75
11 x 14 to 16 x 24	8·50	7·75	7·25	6·?0
18 x 22 to 20 x 30	10·75	9·75	8·75	7·75
15 x 36 to 24 x 30	12·25	10·75	9·00	
26 x 28 to 24 x 36	13·00	11·50	9·75	
26 x 36 to 26 x 44	14·50	13·25	10·75	
26 x 46 to 30 x 50	15·00	14·00	11·25	
30 x 52 to 30 x 54	16·00	14·50	12·00	
30 x 56 to 34 x 56	17·25	15·50	13·50	
34 x 58 to 34 x 60	18·25	17·25	15·00	
36 x 60 to 40 x 60	20·75	18·75	17·25	

Double Thick.

Sizes.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$12·00	$11·00	$10·00	$ 9·25
11 x 14 to 16 x 24	13·75	12·50	11·75	10·50
18 x 22 to 20 x 30	17·25	15·75	14·00	
15 x 36 to 24 x 30	19·75	17·25	14·50	
26 x 28 to 24 x 36	21·00	18·50	15·75	
26 x 36 to 26 x 44	23·25	21·25	17·25	
26 x 46 to 30 x 50	24·00	22·50	18·00	
30 x 52 to 30 x 54	25·75	23·25	19·25	
30 x 56 to 34 x 56	27·75	25·00	21·75	
34 x 58 to 34 x 60	29·25	27·75	24·00	
36 x 60 to 40 x 60	33·25	30·00	27·75	

Sizes above 40 x 60—$10·00 per box extra for every five inches.

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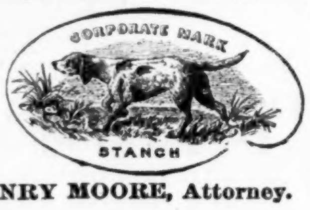

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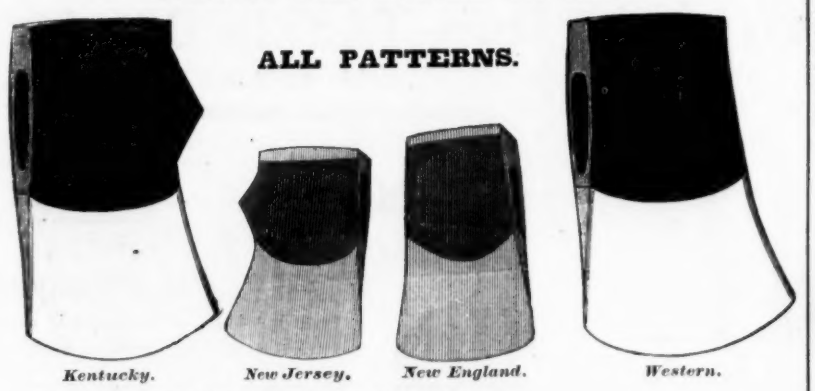

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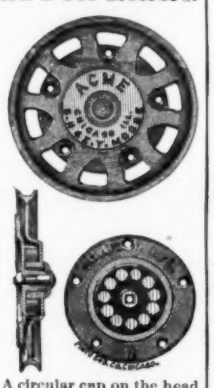

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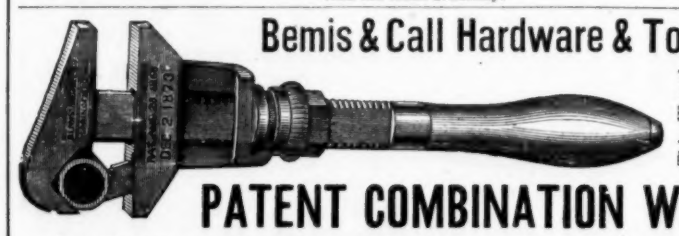

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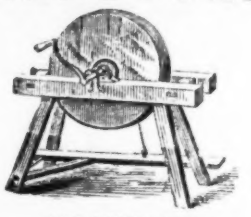

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BUILDERS' HARDWARE, BUTTS, HOUSE TRIMMINGS, CARRIAGE,

And GENERAL HARDWARE

The attention of our old Customers and the Trade generally is invited to our new Illustrated Catalogue just issued, comprising a full assortment of our well known staple goods: Butts (Drilled and Wire jointed), Thumb Latches, Sash, Upright Screw and Side Pulleys, Wardrobe and Harness Hooks, Draw Pulls, Nut Crackers, Cork Screws, &c., &c. Also several new and attractive styles of Fancy Hardware, **at prices to suit the times.**

Our new Patent Fancy Open Work Cap Butt, with Ornamented Knuckle, in Real and Imitation Bronze, and our Nickel Plated Cap Butts, with concealed Screws, are the handsomest in the market, and are attracting much attention. While making plain and japanned goods a specialty, we are prepared to meet the increasing demand for ornamented bronze and nickel plated House Trimmings. Goods packed in boxes or bundles, as may be preferred. For catalogue and price list address

BLAKE BROTHERS HARDWARE CO.,

New Haven, Conn.

IRON BLOCK PLANE.

No. 110. 7 1-2 Inches Long, 1 3-4 Inch Cutter, $9·00 per dozen.

STANLEY RULE AND LEVEL COMPANY, Manufacturers,

Factories, New Britain, Conn. Warerooms, 35 Chambers St., N. Y.

COBB & DREW,

Plymouth, Mass.

Manufacturers of Copper, Brass, and Iron Rivets: Common and Swedes Iron, Leathered, Carpet, Lace and Glass Tacks; Finishing, Hungarian, Trunk Clout and Cigar Box Nails, &c. Rivets made to Order.

NEW YORK AGENCY

Grundy & Kenworthy HARDWARE.

165 Greenwich Street.

Agent for the Philadelphia Star Carriage and Tire Bolts

Established in 1836.

Shelton Company,

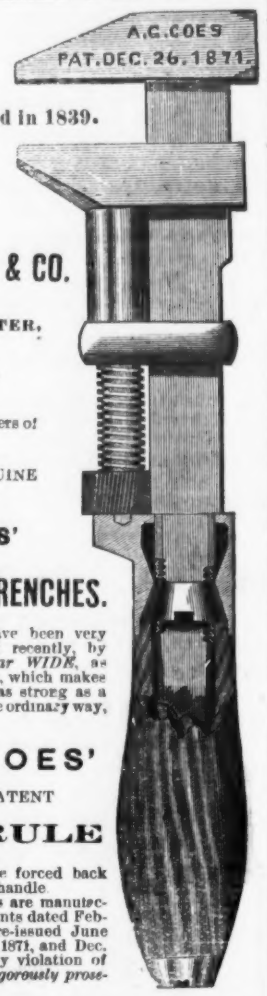
Manufacturers of every variety of

TACKS & SMALL NAILS,

Carriage, Machine, Plow, Stove and Tire Bolts, Coach Screws, Bed Screws, &c.

BIRMINGHAM, CONN

Established in 1839.



A. G. COES & CO.

WORCESTER, Mass.,

Manufacturers of

THE GENUINE

COES'

SCREW WRENCHES.

Our goods have been very much improved recently, by making the *Bar WIDE*, as shown in the cut, which makes a 12 in. Wrench as strong as a 15 in. made in the ordinary way, and by using

A. G. COES'

NEW PATENT

FERRULE

Which cannot be forced back into the handle.

☞ Our goods are manufactured under Patents dated February 7, 1860, (re-issued June 29, 1871), May 2, 1871, and Dec. 26, 1871, and any violation of either will be *vigorously prosecuted.*

We call particular attention to our new Patent Ferrule, with its Supporting Nut (shown in section in the above cut), which makes the strongest Ferrule fastening known.

A. G. COES & CO.

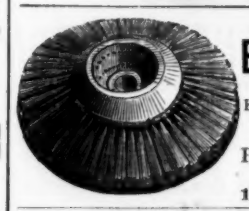
ECCENTRIC

BENCH HOOK

TUCKER & DORSEY

MANUFACTURERS,

INDIANAPOLIS, IND



WHEEL BRUSHES

OF ALL KINDS,

For Silversmiths and all other Manufacturing purposes.

P. M. PREATER,

Manufacturer,

117 John St., N. Y.

H. CARTER

290 Pearl Street, New York.

Potter's Patent

STEP LADDERS.

Manufacturer of and Dealer in all descriptions of

Moulders' and Plasterers' Tools,

And Dealers in

General Hardware, Gilded Copper Weather Vanes,

CARTERS'-PATENT CARRIAGE LIFTING JACK, &c.

The Hart, Bliven & Mead Mfg. Co.,

18 & 20 Cliff Street, and 243 & 245 Pearl Street, New York.

Factories at KENSINGTON, CONN.

MANUFACTURERS OF

BUILDERS' HARDWARE.

Japanned, Brass, Plated, Enameled and Bronze Metal

CUPBOARD CATCHES.

Door Bolts, Sash Fasteners, Drawer Pulls, Store Door Handles, &c., in great variety.

Our Catalogue and "1876 Centennial Appendix" is now ready for distribution to patrons. A full set of samples and Post Office Box in the Main Building (P 70) Centennial International Exhibition, Philadelphia, Pa.

Lloyd, Supplee & Walton,

HARDWARE FACTORS.

MANUFACTURERS OF

Bonney's Hollow AUGERS.

Stearn's Hollow Augers and Saw Vises

Bonney's Spoke Trimmers

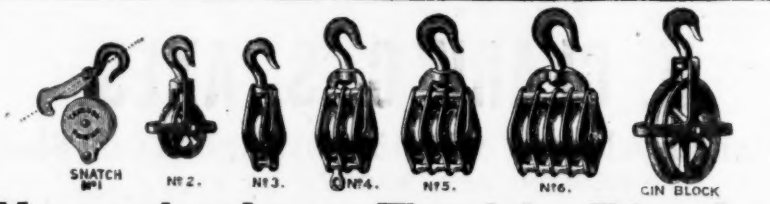
Double Edge Sooke Shaves

Adjustable Gate Hinges

Scandinavian Pad Locks

Flat Key Brass and Iron Pad Locks, &c., &c.

625 Market St., Phila. Pa.



Wrought Iron Tackle Blocks

FOR ROPE OR CHAIN.

Self-Sustaining Rope Pulley Blocks. ☞

Same as the ordinary block, but sustains the weight at any point.

VAN WART & McCOY, Sole Agents, 134 & 136 Duane St., N. Y.

CHAMPION HOG RINGER Rings and Holder

Only Double Ring ever invented. The only ring that will keep HOGS from rooting. No sharp points in the nose.

EAGLE BILL CORN HUSKER

Is the best Husker in the market. Farmers say it is the best. Use no other.

BROWN'S HOG AND PIG Ringer and Rings.

Only Single Ring that closes on the outside of the nose. No sharp points in the nose to keep it sore.

Ringers 75c. Rings 50c 100. Holders 75c. Huskers 25c.

CHAMBERS & QUINLAN, Exclusive Manufacturers, Decatur, Ill.

WILSON MANUFACTURING COMPANY.,

NEW LONDON, CONN.

MANUFACTURERS OF

SOLID BOX VISES.

With or without Convex and Concave Washers.

Jackscrews, Braces, Coffee Mills, Turning Lathes, Clamp Heads and Screws, Parallel Bench Vises, Sash Pullies, Ho House Pullies, Composition Cocks, Bench Screws, Vise Screws, Gridirons, Drill Stocks and Bows, Box Chisels, Rivets, Sheaves, Block Pins, Composition Roller and Iron Bushings, Riggers' Screws, Caulkers' Tools, Pump Chambers, Belaying Pins, Marlin Spikes, Malleable Iron Castings, and General Hardware.

GALVANIZING DONE TO ORDER.

WILSON MFG. COMPANY,

Warehouse, 97 Chambers and 81 Reade Streets. N. Y.

PHILADELPHIA.

(Corrected weekly by Lloyd, Supplee & Walton).

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.—Solid Cast Steel.....₩ ℔ 14c
Peter Wright's, ₩ ℔, gold.....11 @ 10½c
Wilkinson's " .....11 c
Eagle.....list 11 cents—dis 20 @ 20&10 %

Apple Parers.—Domestic.....per doz $ 6 50
Peach Parers..... " 10 50
Bay State Parer, Corer and Slicer..... " 14 50
Other makes..... " 7 50
Lots of 5 to 25 dozen special price.

Axes.—
Mann's (according to weights)..Per doz. $10 50 @ 9 50
Red Indian, " " " " " 10 50 @ 10 00
Red Chieftain " " " " " 11 00 @ 10 50
Crown Prince " " " " " 11 00 @ 10 50
Hunt's " " " " " 12 50 @ 11 50

Augers and Auger Bits.—
Benjamin Pierce.....dis 35 %
Douglass' & Ives' Bits.....dis 40&10 %
Connecticut Valley Auger Bits.....dis 40&10 %
Cook's Bits.....dis 40&10 %
Jennings' Bits.....dis 10 %
Bates' Nut Augers.....dis 40&10 %
Douglass' & Ives' Augers.....dis 40&10 %
Watrous Ship Augers.....dis 20 @ 25 %
Bonney's Pat. Hollow Augers.....dis 25&10 %
Stearns' Patent Hollow Augers.....dis 25&10 %

Balances.—
Light or "Common".....dis 25&10 %
All other Spring Balances.....dis 25 %

Bells.—Bevin Bros. Mfg Co. Light Hand Bells.....dis 70 %
Common (Tissue Paper Weight).....dis 70&10 %
Swiss Pattern Hand Bells.....dis 50 %
Connell's Door Bells.....dis 50&5 @ 50&10 %
Gt. Western & Kentucky Cow.....dis 60 %

Boring Machines.—Bates Mfg. Co., complete with augers.....dis 20 @ 25 %
Douglas Mfg. Co., complete with augers..dis 20 @ 25 %
Common Boring Machines, no Augers.....$4 00 @ 3 75
Auguar " 5 00 @ 4 75

Bolts.—Eastern Carriage Bolts.....dis 75 %
Western " " " .....dis 75 %
Philadelphia " " (Eagle).....dis 60&10 %
" " " (Coleman's)..dis 60&10 %
Wrought Snutter, Stanley.....dis 50 @ 50&10 %

Braces.—Barber's.....dis 40&5 %
Backus.....dis 50 %
Bartholomew's American Ball.....dis 10&10 @ 15&10 %
Spofford's.....dis 50 %

Butts.—Cast Fast Joint, Narrow....dis 25&10 @ 30&10 %
" " Broad.....dis 35&10 @ 40&10 %
Cast Fast Loose Joint.....dis 45&10 @ 50&10 %
" Acorn, Loose Pin.....dis 40&10 @ 45&10 %
" Mayers & Parliament.....dis 35&10 @ 40&10 %
" Acorn Jap'd.....dis 45&10 @ 50&10 %
Wrought Loose Pin.....dis 40&5 %
" Table Hinges and Back Flaps.....dis 35&5 %
" Narrow.....dis 40&5 %
" Loose Joint.....dis 40&5 %
Parker's Blind Butts.....
Buffalo How. Co.'s " } Discount 65&10 %: by the case 70 %.
Clark's " }
Shepard " }
Lull & Porter's (Phila.) Hinges....dis 65 %, case, 60&5 %
Garretson's No. 0 Hinges.....
Cherrytree No. 0 " " } dis 70&10 %

Chains.—German Halter and Coil.....dis 20 @ 25%
Galvanized Pump.....net 13 @ 13½c
Best Proof Coil Chain—

₩ ℔.....	12½	9½	8¾	8	7¾	7c gold
	3-16	¼	5-16	⅜	7-16	½ in.

By the cask, 500 lbs., ½c per lb. less. Common Chain, ¼c per lb. less.

Chisels.—Socket Framing.....dis 60 @ 60&10 %
Socket Firmer.....dis 60 @ 60&10 %
Tang " .....dis 40 %
Beaty's Framing and Firmer.....dis 20 %

Casters.—Iron Bed.....dis 40&10 %
Porcelain Wheel Bed.....dis 50&10 %
Iron and Brass Wheel Plate.....dis 40&10 %
Porcelain Wheel " .....dis 50&10 %

Clothes Wringers.—Universal.....per doz $72 00
Novelty.....72 00
Monitor.....70 00
Discount on 2 dozen lots, $2 per dozen

Coffee Mills.—Common Box and Side.....dis 20 %
Patent Box and Side.....dis 30 %

Cutlery.—American Pocket (best).....dis 30 @ 33⅓ %
Landers, Frary & Clark, J. Russell & Co. and Lamson & Goodnow Mfg. Co. Manufacturers' net prices

Drawing Knives.—Hart Mfg. Co.'s.....dis 60 %
Adjustable Handle.....dis 10 @ 15 %
Beatty.....dis 15 @ 20 %

Fry Pans.
Tinned.....dis 40 @ 45 %

₩ doz..	$3 50	4 00	4 50	5 00	5 50	6 50	7 50	9 00 10 00
No....	0	1	2	3	4	5	6	7 8

Burnished.....dis 40 @ 45 %

₩ doz..	$3 00	3 75	4 25	4 75	5 25	6 00	7 00	8 00 9 00
No....	0	1	2	3	4	5	6	7 8

Files.
Nicholson Mill Files.....new list
" Bastard.....
" Taper.....
Butcher's Mill.....₩ £ gold $4 75 @ $4 50
" Bastard.....₩ £ gold 4 75 @ 4 50
" Taper.....₩ £ gold 4 75 @ 4 50

Fluting Machines.
Mrs Knox—4½ in. rolls.....each $3 50 net
" —6 in. rolls....." 4 00 net
" —8 in. roll....." 8 00 net
Imperial—4½ in. roll....." 3 50 net
" —6 in. roll....." 4 00 net
Crown—4 ½ in. roll.....3 50 net
" —6 in. roll.....4 00 net

Hammers.
Yerkes & Plumb's.....dis 15 @ 20 %
Hammond & Son's.....dis 15 & 20 %
Veree.....dis 20 @ 25 %

Hatchets.
Beatty's.....dis 25 %

Shingling and Half.	₩ doz..	$7 00	7 50	7 75	8 00
	No....	1	2	3	

Yerkes & Plumb.....dis 15 @ 20 %

Shingling and Half.	₩ doz..	$7 00	7 50	8 00	8 50
	No....	1	2	3	4
Claw....	₩ doz.	$7 50	8 00		
	No.	1	2		3

Hinges.
Strap and T.....dis 60 @ 60&5 %

Horse Nails.

	Nos.	6	7	8	9	10
Ausable		27	25	24	23	22
Globe		28	26	25	24	23
Brundage		26	24	23	22	21
	Nos.	5	6	7	8	9
Putnam		32	28	26	25	24

On Ausable Globe and Brundage 1000 ℔ lots.....dis 5 %

Knobs.—
Door Mortise and Rim, Mineral and Porcelain..... } New list; Discount 35 @ 35&5 %

Locks and Latches.
Door Locks, Rim and Mortise.....dis 35 @ 35&5 %
Till and Cupboard.....dis 25 %
American Padlocks.....dis 35 @ 35&5 %
Scandinavian Pad Locks.

₩ doz.....	$10 50	10 50	12 00	12 00	15 00	15 00 } 45&5 %
No.....	59	59½	60	60½	61	61½ }
₩ doz.....	$18 00		18 00		22 00	22 00 }
No.....	62		62½		63	63½ } 45&5 %

Trunk Locks.....
Thumb and Roggens Latches.....dis 25 %

Lanterns.—Square Candle and Oil.....dis 10 %
Globe for Oil.....dis 10 %
" " Kerosene.....dis 10 %
Tubular Lanterns.....dis 10 %

Mattocks.—Long and Short Cutter.....dis 25 %
Western Pattern.....dis 25 %
Pennsylvania Pattern.....dis 15 %

Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets.....dis 20 %
Stebbins' Gates.....dis 62½ @ 62½&10 %
Lincoln's " .....dis 40&10 @ 50 %
Landers, Frary & Clark's Petroleum.....dis 15&10 %
Taylor's Petroleum Faucets.....dis 20&10 %
Brass Liquor Cocks.....dis 40 %

Meat Cutters.—Dixon's.....dis 25 %
Woodruff.....dis 25 %
Stowe.....dis 25 %
Hale's.....dis 35 %
Stuffers.....dis 25 %

Planes.—Auburn Tool Co., "Bench".....dis 40 %
Second Quality.....dis 50 %
Metallic Plane Co.....dis 25&5 %
Evans Pat. Circular.....net

Plumbs and Levels.
Adjustable.....dis 60&10 %
Non-Adjustable.....dis 60&10 %

Plane Irons.—American.....list net
Butcher's.....gold £, $5 00

Picks.—Philadelphia.....net
Pittsburgh.....net

Rules.....dis 60&10 %

Rakes.—Cast Steel Garden.....dis 40 @ 40&5 %
Malleable Garden.....dis 40 @ 40&5 %
Wood Head Iron Teeth.....dis 40 %

Steelyards.—American Pattern.....dis 20 %

₩ doz.....	$5 50	7 00	9 00	10 00		12 00
No.....	50	100	150	200	25	300

English Pattern.....dis 15 %

₩ doz.....	$7 00	8 67	10 67	12 67	14 67	16 67
No.....	50	100	150	200	250	300

Hart's Pattern.....dis 50 %

₩ doz.....	$14 50	17 75	21 00	26 50	31 50	35 50
No....	50	100	150	200	250	300

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened.....₩ doz. $9 50
Clipper No. 10, Bronzed Blade Boxed and Sharpened.....₩ doz. $9 00
Clipper No. 5, Painted Red, Boxed and Sharpened.....₩ doz $8 50
Cast Steel Scythes.....$7 50 @ 8 00
German " .....6 50 @ 7 00

Squares.—Steel and Iron, new list.....dis 50 %

Saws.—Disston's Cross Cut, No. 1.....per ft., 55c
Disston's Cross Cut No. 2.....per ft., 50c
Disston's Cross Cut, Patent.....per ft., 50c
W. McNiece's H'd, Cross-Cut & Circ'r, new list.dis 15 %
Boynton's Lightning, new list.....dis 50 %
Boynton Champion.....dis 45 %
Boynton One-Man Cross Cut Saws.....dis 40&10 %
Boynton Billet Webs (no Frame).....$6 00

Shovels and Spades.
Rowland's Plain Back.....dis 47½ %
" Back Strap.....dis 40&5 %
Extra discount on above for 10 days' cash, 5 %.
Oliver Ames & Sons.....dis 25 %

Sad Irons.—Richmond (polished face).....per lb. 3½c
Richmond (polished face)..... by the cask " 3
Stone.—Arkansas Oil, No. 1.....₩ ℔ $
" Turkey Oil, No. 1.....
Washita Extra.....net " 35c
" No. 1.....net " 30c
" " 2.....net " 25c
Hindostan 8 inch....." 5c

Screws.
United States and others in Combination...dis 52½ %
Keystone, not in Combination.....dis 52½&5 %

Spoons.—
Plated.....dis 40 @ 40&5 %
Britannia, Boardmans (new list).....dis 50&10 %
" Parkers (old list).....dis 50 @ 50&10 %
German Silver.....dis 30 %
" Light.....new list dis 35 %
Lalance & Grosjean Iron.....dis 40 %

Springs.—Gray's Door.....dis 60&10 %
Torry's Door.....dis 60&10%

Stocks and Dies......dis 10&5 %

Stove Polish.—Gem.....₩ gross, $5 00
Onyx.....$5 00

Try Squares.—Winterbottom.....dis 10 @ 15 %
Stanley Rule and Level Co.....dis 45&10 %
Willis Thrall, No. 2.....dis 40&10 %
Disston's No. 2.....dis 40 %

Tacks, &c.—Half Weight Tacks.....dis 25 @ 25&10 %
" by the case...dis 22½&7½ %
Trunk, Clout and Finishing Nails.....net to 10 %
" " the case.....dis 7½ %

Traps.—Genuine Oneida—Newhouse list....dis 20&2½ %
Im. Oneida—Newhouse list (1st qual.)..dis 40 @ 40&5 %

Vises.—Solid Box, currency.....₩ ℔ 13½c

Wrenches.—Coes Genuine.....dis 40&5 @ 40&10 %
Coes Imitation Wrought Bar.....dis 50&10 %
" " Malleable Bar.....dis 60&10 %
" " (Kellogg) Malleable Bar.....dis 65&10 %
Tafts Pattern (Wrought Bar).....dis 70 @ 70&10 %
Philadelphia Tool Co.'s Pat. Duplex.....dis 25 %
" " " Improved Baxter.....dis 25 %
" " " Adjustable Fork.....dis 25 %

Wire.—No. 0 to 18.....(Advanced April 24th)...dis 50 %
No. 19 to 26.....dis 55 %
No. 27 to 36.....dis 52½ %
Coppered 0 to 12.....dis 15 @ 20 %
Tinned Broom Wire.....dis 35 %
Galvanized Wire No. 1 to 15.....dis 40 %

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.
Oct. 18, 1876.

Augers—Snell Mfg. Co.....dis 25&10 %
Axes—Francis.....$12 00
Bits, Auger—Snell Mfg. Co.....dis 25&10 %
" Phœnix.....
Bells, Cow—Yaw's Genuine.....dis 40 %
Braces—Bit, Spofford's Patent.....dis 25 %
Brads, Cut.....dis 50 %
Brass—Sheets.....dis 50&10 %
Boards—Stove, Brooks' Pat.dis 35 % 4 mos.; 2½&5 % 30 dys
Bolts—Stove.....list net
Brick—Bath (box of 2 doz) Best English.....dis 40 %
Can Openers—Sprague's.....$1 25
Cases—Parlor Coal Hod.....dis 35&10 %
Chisels—Firmer Socket.....dis 15 %
" Framing Socket.....dis 70 %
" Corner Socket Chisels.....dis 70 %
" Slick's Carpenters'.....dis 70 %
Castings—Malleable.....dis 70 %
Cocks—Globe and Bibb.....₩ ℔ 9c
Cutters—Meat, "Holes".....dis 40 %
Egg Beaters—"Dover".....40 %
Elbows—Corrugated.....per doz $4 00
" Adjustable.....dis 15 %
" Columbus.....dis 30 %
Files—Maischoss Bros.....dis 25 %
Fluters—Geneva Hand.....dis 50&10 %
Freezers, Ice Cream—"Champion".....₩ doz. $15 00
Hammers—Henry W. Kip's.....dis 33⅓ %
Hinges, Gate—Shepard's.....dis 10&5 %
Hinges—Window Blind—
Shepard's and Standard.....dis 60&10 %
Hods, Coal—Plain, Black and Galvan'd...new list dis 15 %
" Funnel, Black and Galvanized.....dis 15 %
" Fancy and Helmet.....dis 15 %
Sad Irons.....dis 15 %
Kettles—Brass.....30c
" Copper, "Hand Made".....₩ ℔. 45c
" Enameled.....₩ ℔. 38c.
" Knives, Drawing—Oval No. 1.....dis 50 %
" Razor Blade.....dis 70 %
Lanterns, Tubular—with guard.....dis 60&10 %
" Without guard.....$11 50 }
Machines—Apple Paring.....11 00 } dis 15 %
Machines—Boring, Snell's.....7 50 ₩ doz
Mills, Coffee—Box and Side, common.....dis 25 %
" Box Union and Eagle.....dis 25 %
Cut Nails, "Harrisburg," 10d.....dis 30 %
Horse, Ausable.....No. 5 6 7 8 9 10
" " 30 27 25 24 23 22c
" " Polished & Polished.....add 1c ₩ ℔
" " 1000 lbs.....
Paint—White Lead, U. S. Gov't.....dis 5 %
Pans—Dripping.....₩ ℔ 8½c
" Frying.....₩ ℔ 9c
Rivets—Iron, Black and Tinned.....dis 40 %
Screws—"American Screw Co"—
" Flat Head, Iron.....dis 52½ %
" Flat Head, Brass.....dis 52½ %
Sieves—Wood, Hoop Iron.....dis 52½ %
" Tinned.....$1 35
Sifters—Ash.....1 65
Skates and Straps—White's.....$9 00 @ $12 00
Spoons, Iron Tinned.....dis 30 %
" by the case.....dis 10 %
S. S. & Co., Kitchen.....dis 20 %
Plated Rogers' A No. 1.....30&10 %
Britannia.....dis 40 %
G. S. Hall, Elton & Co.....dis 55 %
Scales—Buffalo Scale Works.....dis 30 %
" Fairbanks.....dis 25 %
Stove Polish—Gem.....dis 15 %
" Dixon's.....₩ gross, $4 50
" Lemon, Porcelain.....6 00
Tacks—Half Weight Am. Iron.....₩ doz., $5 40
Tea Trays.....dis 75&10 %
Thermometers—Tin Case.....dis 50, 10&10 %
Tools—Tinmens'.....dis 15 %
Vases—Palace Coal.....dis 10 %
Vises—.....dis 15 %
" Parallel, Buffalo.....
Ware—French, Tinned and Iron.....dis 30 %
" Stamped and Japanned.....dis 20&10 %
" Cast Iron Hollow.....dis 15 %
Wire—Brass and Copper.....dis 45 %
Wire—Bessemer Steel.....list net
Wringers—Novelty.....$72 00; lots of 2 doz., $70 00
Tin Plates.—Add for each X.
10x14, IC, Charcoal.....$8 25 | 14x20 C. terne.....$7 50
12x12, " .....8 25 | 20x28 C, " 16 00
12½x17, " .....7 75 | 20x28 X, " 21 00
14x20, " .....8 25 |
Pig Tin—Straits.....22c @ 23½c
Bar Tin.....23c
Solder—No. 1, Crook's.....15c
No. 1 Star.....13c
Sheet Zinc—
"Lasalle".....570 100 ℔ casks
Sheets.....$9 50 9 80 ₩ 100 ℔s
Babbitt Metal.....₩ ℔ 12c
Iron Wire—Bright and Annealed.....dis 50 %
Coppered.....dis 45 %
Tinned.....dis 30 %
Tinned Broom, } Nos. 20 21 22 } dis 40 %
30c 21c 21c }
Copper—Sheathing 14 @ 18 oz.....₩ ℔ 31c
Planished.....₩ ℔ 37c @ 39c
Bottoms.....₩ ℔ 33c
Bolts.....₩ ℔ 32 @ 34c
Brazers' Sheets.....₩ ℔ 32 @ 34c
Sheet Iron.—
13 Common.....$3 60
24 Common.....3 70
26 Common.....3 90
24 W. D. Wood & Co., Smooth Finish.....4 75
Planished.....A. B.
14c 10c
Gen. Russia, No. 1 stained.....12½c
" clean.....13½c
Galvanized.....dis 33⅓ %

DETROIT.

(Reported by Messrs. Jewett & Root.)
Sept. 25, 1876.

Tin Plate—Best Grades.
IC, 10x14, 12x12, 14x20.....$8 25
IX, 10x14, 12x12, 14x20.....10 75
IXX, 14x20.....13 25
IXXX, 14x20.....15 75
IXXXX, 14x20.....18 25
DC, 12½x17.....7 75
DX, 12½x17.....10 25
DXX, 12½x17.....12 75
DXXX, 12½x17.....15 25
DXXXX, 12½x17.....17 75
IC, Terne, 14x20.....7 85
IX, " 14x20.....10 35
IC, " 20x28.....16 20
IX, " 20x28.....21 20
Pig Tin—Straits.
Large Pigs.....22c
Small Pigs.....22½c
Bar Tin.....23c
Solder—Pure Refined.
No. 1.....14c
No. 2.....12c
Copper
Sheathing, 14, 16 and 18 oz.....31c
Planished, 14x48.....37c
" Boiler Sizes.....39c
Bottoms.....33c
Sheet Iron.
No. 18, Am. Common.....$3 50
No. 24, Am. Common.....3 70
No. 26, Am. Common.....3 90
No. 27, Am. Common.....4 10
No. 24, W. D. Wood & Co., Smooth.....4 70
Russia Genuine Perfect.....14c
A B
Planished Russia.....13c 10c

PITTSBURGH.

The following are the Card rates, f. o. b. in Pittsburgh of Lewis, Oliver & Phillips, H. B. Newhall, 11 Warren St. New York, Agent.

Iron, standard list assorted sizes, for large orders, specifications to include Bands, small Rounds and Ovals, 50c. rate, 2 % off net.
Merchant Bar Iron, as per terms named above.
Flat Rail (1¼x¼), punched and coun'sunk....4c ₩ ℔ net
Iron Wedges.....4c ₩ ℔ net
Norway Nail Rods.....8½c ₩ ℔ net
Iron Crow Bars (in ordering please state whether "Wedge" or "Pinch" point)....4½c ₩ ℔ net
Beetle Rings.....6 c ₩ ℔ net
Fence Pickets—
⅝ round, bent to shape, 25c ₩ ft. of fence, less 15 % off.
Discount off Standard List.
Carriage and Tire Bolts, 75 % off net.
Stove Bolts.....80 % off net
Elevator Bolts.....25 % off net
Machine and Square Head Bolts....new list 50 % off net
Coach and Lag Screws.....50 % off net
Bolt Ends.....50 % off net
Pat. Hot Pressed Sq. and Hex. Nuts..." 7c ₩ ℔ off net
Washers, all made from new band iron " 7c ₩ ℔ off net
Nuts and Washers in 25 lb. boxes, ¼c ₩ ℔ ex. Nuts and Washers in lots less than one keg each size, ½c ₩ ℔ ex. Nuts and Washers in 5 lb. boxes, 1c. ₩ ℔ ex. net prices.
Standard Caps, for Plows.....5c. ₩ ℔ net
Iron Harrow Teeth, in lots of 3 tons or more, packed in 200 lb. boxes, 1 in. diam. 5c ₩ ℔ net; ¾ in. diam. 3c ₩ ℔ net; ⅝ in. diam. 3½c ₩ ℔ net.
Pat. Headed Harrow Teeth, packed in boxes ½c ₩ ℔ ex.
Skein Bolts, in bulk, in lots of 1 keg or more, ⅜ in. diam. 5c ₩ ℔ net; 9-16 in. diam. 6c ₩ ℔ net; ½ in. diam. 7c ₩ ℔ net. 1c ₩ ℔ extra when less than 1 keg of each size is ordered.
Screw Hook and Eye Hinges, ⅞ to 1 in. diam., 8c ₩ ℔ net; ¾ in. diam., 9c ₩ ℔ net; ⅝ in. diam., 11c ₩ ℔ net.
Strap & T Hinges.....No. 10&5 % off net
Screw Hitching Rings, light, with ¼ ring, No. 1, $4 25 ₩ 100 net; heavy, with 5-16 ring, No. 4, $4 75 ₩ 100 net.
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 ft. long.....₩ ℔ 3½c net
1 to 2 in. diam. from 4 to 8 ft. long....." 3½c net
1 to 2 in. diam. from 1½ to 4 ft. long....." 4½c net
⅝, ¾ and ⅞ in. diam. over 4 ft. long....." 4½c net
⅝, ¾ and ⅞ in. diam. from 1½ to 4 ft. long " 4½c net
Bridge bolts with upset ends.....¼c. ₩ ℔ extra
Wrought Iron plates, punched.....4½c. ₩ ℔ net
Cast Iron Washers.....₩ ℔ 3½c net
Duck Nest Tuyere Irons.....$13 50 ₩ doz net

WAGON HARDWARE.—Standard List.

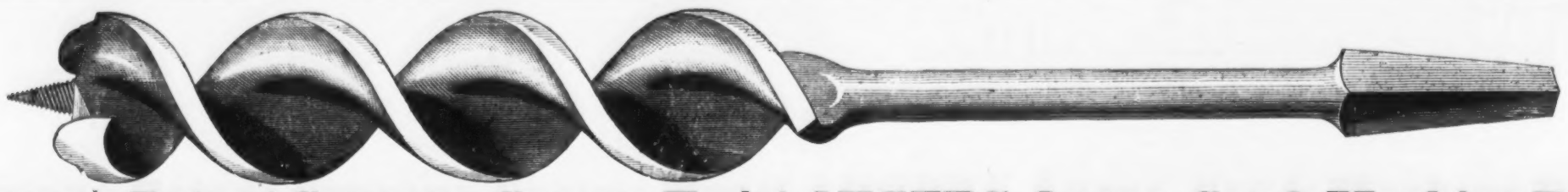
Single Tree Iron, Wt. Hook, Malleable Ferrule..₩ ℔ 19c
" " " and Clip.....₩ ℔ 25c
Single and Double Tree Iron, Wrought Centre Clip, ¾ in. Welded, with ¾ in. Ring.....₩ ℔ 15c
Neck Yoke End Ferrule, Malleable, with Wt. Iron Ring.....₩ ℔ 19c
Neck Yoke Attachment, with plates complete..₩ ℔ 15c
25 per cent. off Single and Double Tree Irons, Neck Yoke End Ferrules and Neck Yoke Attachments, for orders of 50 set, and 10 per cent. additional off for quantity orders, same as other Wagon Hardware, as noted below.
Plow Single Tree, Ironed complete, Irons all Wrought.....each, 55c
Wagon Single Tree, Ironed complete, Irons all Wrought, except Malleable Ferrule.....each, 65c
Wagon Single Tree, Iron complete, Irons all Wrought; Improved End Pieces riveted on; one side acts as a wear iron for wheel to rub against.....each, 65c
Neck Yoke, Ironed complete, Iron all Wrought, except End Ferrules, with Wt. Iron Rings....each, 75c
Wagon Box Strap Bolts—

10 in. long by	7-16	at Screw End,	₩ set of 8 bolts..			45c
12 "	½	"	"	8	"	55c
10 "	9-16	"	"	8	"	65c
12 "	9-16	"	"	8	"	70c
14 "	9-16	"	"	8	"	80c
10 "	⅝	"	"	8	"	80c
12 "	⅝	"	"	8	"	80c
14 "	⅝	"	"	8	"	90c
16 "	⅝	"	"	8	"	1 00
18 "	⅝	"	"	8	"	1 10
20 "	⅝	"	"	8	"	1 20

5c ₩ set for each additional inch over 14 in. All lengths made.
In ordering Box Strap Bolts please give diameter at Screw End.
Wagon Box Rods, narrow track, each.....15c
" " wide track, each.....17c
Single Tree Irons, ₩ set of four pieces.....33c
Wrought Iron Bolster Plates, 2¾ in. wide, ₩ set.....45c
" " 3 " " 50c
" " 3½ " " 55c
" " 3½ " " 60c
Wagon Brake Ratchets, each.....14 c
" " finished with guard, each..40 c
Wrought Hammer Straps, heavy pattern, each.....18 c
" " light " each.....12 c
" Rub Irons, each.....9 c
Stay Chain Hooks, each.....5½c
Double and Single Tree Clips, figure 1, each.....8 c
" " " 2, each.....9 c
" " " 3, each.....11 c
Pole Caps, each.....20c
Single Tree Hooks, Nos. 1 and 2.....4½c
Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks, Clips, Single Tree Hooks, and Pole Caps, in lots of 50 sets.....dis 25 %
For each order amounting to $200 net, or over, for the following goods: Wagon Hardware, Carriage and Tire Bolts, Rivets, Skein Bolts, Nuts, Washers, Bevel Box and Tongue Cap Iron, we will allow an extra discount of 10 per cent on all Wagon Hardware, subject to discount, comprised in the order.
Axle Tree Clips, No. 1.....each 3¼c net
" " No. 2.....3¼c net
" " For Farm and Lumber Wagons, Shank, 9-16 in. flat part 1¼ in.....each, 7¼c net
Plow and Wagon Clevises.....₩ ℔ 8c net
California Tire Rivets and Burrs, 5-16.....10c net
" " " ¼.....11c net
Wagon Box Staples, 1½ to 2½ in. to clinch..₩ 1000 $10 75 net
" " Bevel Box Iron, to rivet on..₩ 1000 7 25 net
Neck Yoke Eyes, each.....4½c net
" " with ⅜ rings, each.....7c net
King Bolts, ⅞, 1, 1¼, and 1¼ in. diam.....₩ ℔ 3½c net
Wagon Rivets, ex. large flat oval and steeple head, ¼ in. diam., 1 in. and longer.....7½c net
Wagon Tavets, 3-16 in. diam., 1 in. and longer " 8½c net
" " ¼ to 1 inch long.....₩ ℔ 1c extra
" " & Nails, in 5 ℔ paper boxes.... " 1c extra
" " in 25 ℔ wood ... " ½c extra
Wagon and Hinge Nails, pointed by hand—

⅛x3 and longer.	2¼ & 2½	2 & 2¼	1¾ and shorter.
	11c ₩ ℔.	13c ₩ ℔.	15c ₩ ℔. 17c ₩ ℔ net
3-16x3 and longer.	2¼ & 2½	2 & 2¼	1¾ and shorter.
	12c ₩ ℔.	14c ₩ ℔.	16c ₩ ℔. 18c ₩ ℔ net

Wagon Rivets and Nails, in less lots than one keg each size.....½c extra
Double Tree Plates.....7¾c net
Coupling " .....4½c net
Tongue " .....8½c net
Neck Yoke Plates.....9½c net
Tongue Cap Iron, 1¾, 2 & 2¼ in. wide, same price ₩ ℔ as No. 12 Band Iron.
Wagon Chains, Stay, Lock and Tongue, 5-16 in. ₩ ℔ 9c net; ¼ in., 10c net.
Our prices are all subject to change of market, without notice.

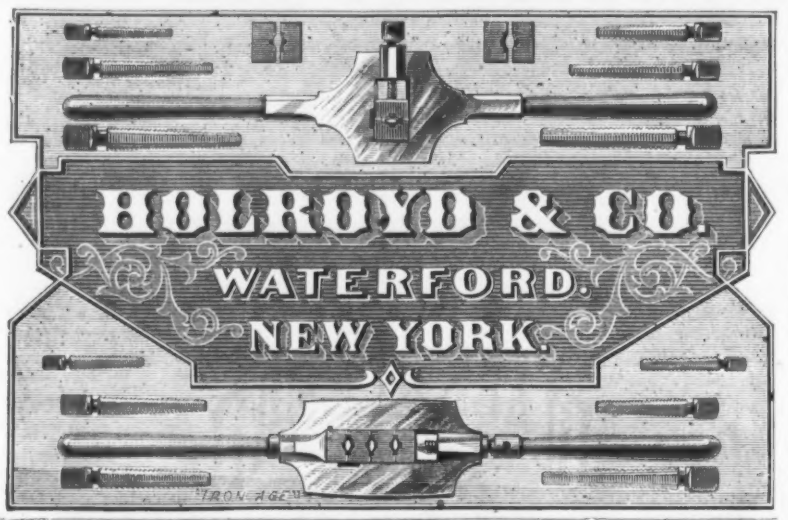


Kasson's Patent Concavo-Convex Twist AUGERS, Auger, Car & Machine Bits.

The front or working faces of these Augers and Bits are Concave, and the rear faces are Convex. This peculiar construction reduces friction in boring, prevents clogging, and enables the operator to do more work with less effort than with any other Auger or Bit now in use. They do not require to be withdrawn for clearance of chips while any part of the twist is outside the surface of the wood. Correspondence and orders solicited. These goods are ***Solid Cast Steel,*** and superior to any in the market. For sale to dealers at standard list, with usual discounts. Manufacturers supplied with machine Bits (spur lip for cross, or curved lip for end boring) of any length of twist required.

GRAHAM & HAINES, Sole Agents, 113 Chambers Street, N. Y.

MILWAUKEE MANUFACTURING CO., SOLE MANUFACTURERS, Milwaukee, WIS.



C. SCOFIELD'S STRAIGHTENER OR BENDER,

For Shafting, Axles Tubes, Rails, &c.

There has long been a want of some device by which the straightening of shafting could be done without removing the work from the centers, and at the same time do it quickly and accurately. The

SCOFIELD PATENT SHAFT STRAIGHTENER

meets just such a want; the apparatus is light and can be easily handled, yet it is of sufficient strength for the purpose required. It can be placed upon the shears of the lathe, and moved along the entire length of the work. It is especially

Adapted to Removing Short Bends,

which frequently occur in long lengths of shafting. The lightness of the Straightener renders it eminently

Adapted for Line and Counter-Shafting,

without necessitating the time and trouble of removing hangers and detaching couplings, but can be

Easily applied to the Shaft while in Position.

It can also be used on the bench for short lengths.

For Circulars, Price List, &c., Address,

C. SCOFIELD & CO.,

Vineland, N. J.

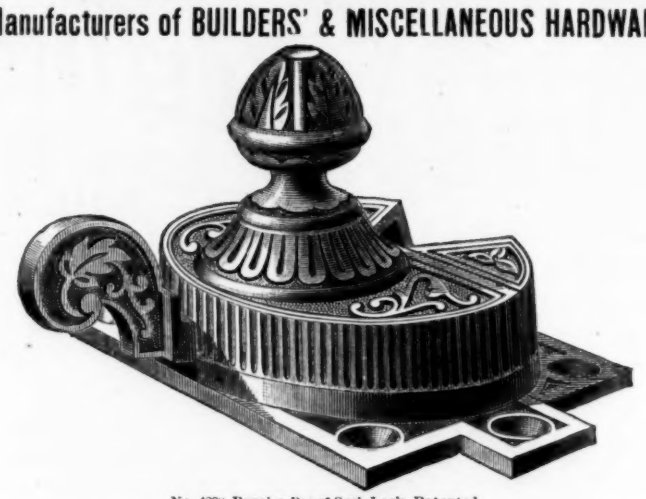
PUREST BLACK LEAD, Lump and Ground.

McILVAINE BROS.,

15th and Hamilton Streets, PHILADELPHIA.

P. & F. CORBIN,

Manufacturers of BUILDERS' & MISCELLANEOUS HARDWARE.



No. 4298, Burglar Proof Sash Lock, Patented.

DOOR LOCKS, LATCHES, BUTTS, BRONZE TRIMMINGS, and ARCHITECTURAL BRONZE WORK GENERALLY.

Factories: **New Britain, Conn.** Warehouse, **87 Chambers & 69 Reade Sts., New York.**

STAFFORD MANUFACTURING CO.'S Stencil Combinations.

Containing: Stencil Alphabet, Figures, Can Stencil Ink and Brush.

For marking boxes, barrels, bags, and packages for shipment. Printing all manner of showcards, notices, signs, numbers, prices, &c., and other purposes too numerous to mention. Instructive and amusing for boys.

WHOLESALE PRICES.

Size.		Size.	
½ in., per dozen	$5·00	1½ in., per dozen	$10·00
¾ " "	6·50	2 " "	12·00
1 " "	7·00	2½ " "	18·00
1¼ " "	9·00	1½ " with lower case	15·00

An illustration of sizes sent on application,

For sale by Hardware Dealers and Stationers.

No. 66 Fulton Street, New York.

REESE'S PATENT ADJUSTABLE BUSINESS Stencil Letters & Figures.

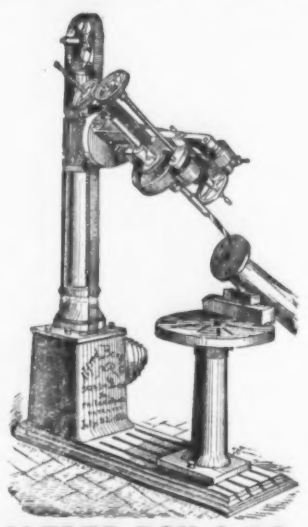
Assorted sizes for Straight, Circular and Half Circle Printing. These letters **CHANGE** to form any **NAME, WORD** or **SENTENCE AT PLEASURE.** Millions retailed yearly for Bag Plates, &c., marking Robes, Show Cards, and 1000 uses.

SUPERIOR TO ALL OTHER STENCILS.

Also Ink and Brushes. Send Postal Card for Samples, new Price List and Illustrated Circular.

O. G. BRYANT, 102 Washington St., CHICAGO.

Owner of Patents in the United States and Canadas, and exclusive Manufacturer.



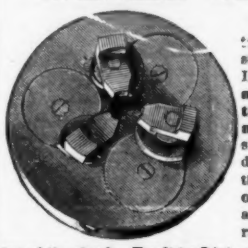
ALFRED BOX & CO., Reliance Tool Works,

Removed to 312 Greene St.,

PHILADELPHIA.

Engineers and General Machinists, and Manufacturers of Lathes, Drill Presses, and Special Tools to order.

JOHNSON'S PATENT UNIVERSAL LATHE CHUCK.



We invite attention to the superior construction of this chuck. Its working parts are **absolutely protected from dirt and chips.** It is strong, compact and durable, and will hold the greatest variety of work, as the jaws are adjustable with a range the full diameter of the chuck. For Price List address.

Lambertville Iron Works, Lambertville, N. J.

BUFFALO Bellows Factory and Planing Mill.

ESTABLISHED 1852.

JOSEPH CHURCHYARD, Contractor, Builder AND Manufacturer,

CLINTON, cor. ADAMS STS., Buffalo, N. Y.

SASH, BLINDS DOORS,

Cisterns, Tanks, Stairs, Hand Rails, Newels, Mirror Frames, Mantels, Curtain Cornices, Book Cases, Veneered Doors, Mouldings, and complete interior and exterior finish for houses.

ROUGH AND PLANED LUMBER,

Flooring, Siding, Shingles, Lath and Fence Posts.

Blacksmiths' & Moulders' Bellows.

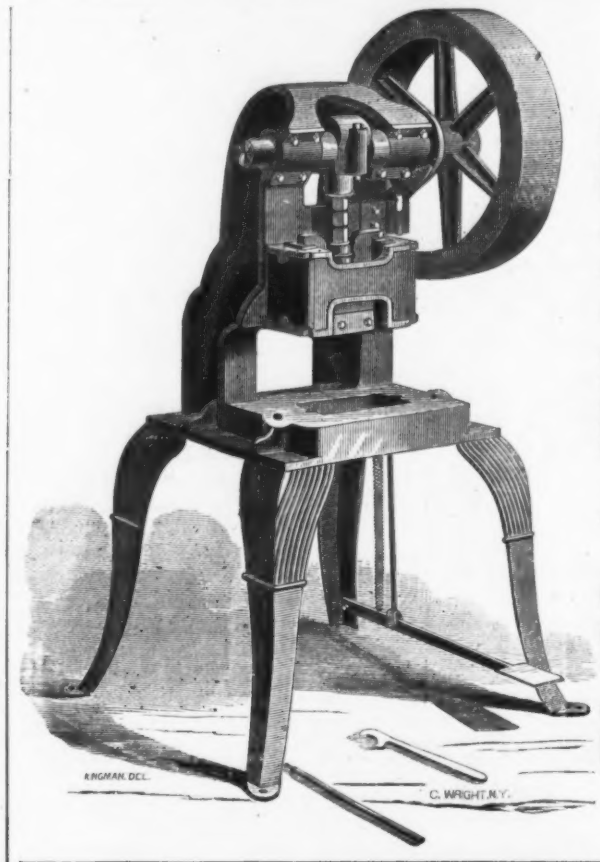
J. CLARK WILSON & CO., Agents, 51 Beekman Street, N. Y.

586 Water St., N. Y.

Manufacturers of

NEWCOMB BROS., Standard Bellows.

SCOTT'S



BLISS & WILLIAMS,

Manufacturers of all Kinds of

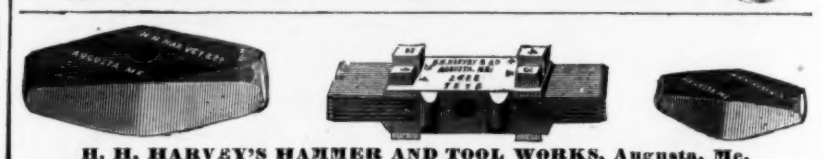
PRESSES, DIES, & SPECIAL MACHINES,

FOR WORKING SHEET METALS, &c.

167 to 173 Plymouth Street, Cor. of Jay, Brooklyn, N. Y.

H. HAMMOND Manufacturer of CAST STEEL HAMMERS

IRON AGE SC. HARTFORD, CONN.

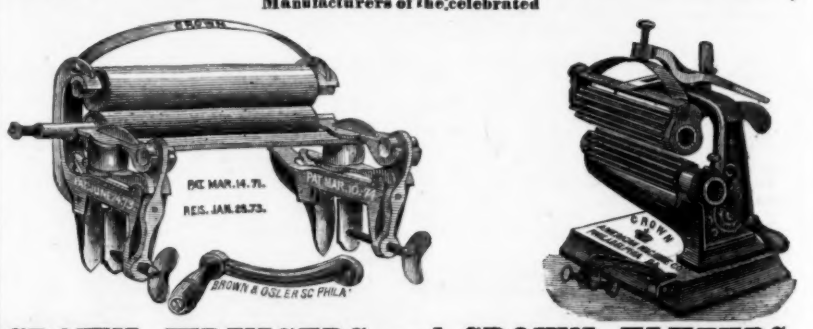


H. H. HARVEY'S HAMMER AND TOOL WORKS, Augusta, Me.

SPECIALTIES.—Stone Cutters' Hammers and Tools, Quarrymen's Drills, Wedges and Half Rounds, &c., &c., &c., Miners' Hammers and Tools, Blacksmiths' Hammers and Tools, Patent Hammers for picking burr stone. Also the common Mill Picks, Ice Tools and Wood wedges Steel or Iron, R. R. Sould eye Picks, with one lb. of best Cast Steel inserted in each pick. The above goods are warranted Inferior to none, both in quality and style of finish. All hammers have true eyes and polished faces, and are made from solid cast steel. No charge is made for boxing or carting at Augusta; shipping facilities are excellent. Hammers made to any pattern or drawing. Capacity of works, one ton of hammers per day. A full line of the above goods constantly in stock. Catalogue on application.

The American Machine Co.,

Manufacturers of the celebrated



CROWN WRINGERS and CROWN FLUTERS

The most popular in the market. Office, 430 Walnut Street, Philadelphia, Pa.

NORTHWESTERN HORSE NAIL CO.

ESTABLISHED IN 1862.

HAMMERED AND FINISHED HORSE NAILS.

We offer our Finished Nail to the trade with the confidence that it has no equal in the market. It is the genuine "Northwestern" Nail, Finished, and we give it our unqualified guaranty.

Office and Factory, 56 to 68 Van Buren st., Chicago.

A. W. KINGSLAND, Secretary.

GLOBE NAIL COMPANY,

MANUFACTURERS OF

Pointed, Polished & Finished Horse Shoe Nails.

Recommended by over 20,000 Horse Shoers.

All nails made from best NORWAY IRON, and warranted perfect and ready for driving. Orders filled promptly and at lowest rates by

GLOBE NAIL CO., Boston, Mass,

CINCINNATI.

Reported by Sellew & Co., Importers and Jobbers in Metals, No. 214, 216 and 218 Main street.

Oct. 10, 1876.

Tin Plate.—I. C. 10x14 Charcoal..... @ $8·50
I. X. 10x14 Charcoal..... @ 10·50
I. C. 14x20 Charcoal..... @ 9·00
I. X. 14x20 Charcoal..... @ 11·00
I. C. 12x12 Charcoal..... @ 9·00
D. C. 12½x17 Charcoal..... @ 9·25
D. X. 12½x17 Charcoal..... @ 11·50
I. C. 14x20 Charcoal Roofing..... @ 7·75
I. C. 20x28 Charcoal Roofing..... @ 16·50
I. C. 10x14 Coke..... @ 7·50
I. C. 14x20 Coke..... @ 8·50
I. C. 10x20 Coke..... @ 13·00
Sheet Zinc.—Cask..... @ 9½c
Sheet..... @ 10 c
Copper.—Braziers..... @ 32 c
Planished..... @ 39 c
Sheathing..... @ 32 c
Bottoms..... @ 33 c
Bar..... @ 22 c
Block Tin.—Pig..... @ 23 c
Bars..... @ 25 c
Lead.—Pig..... @ 7¼c
Bar..... @ 8½c
Solder.—S. & Co..... @ 18 c
A. L..... @ 15 c
Market Wire.—Bundles..... dis 40 %
Less..... dis 35 %
Sheet Iron.—"B," No. 27..... 4·10c
Smooth, "S. U," No. 27..... 5·10c
Smooth D Refined, No. 27..... 6·75c
Planished "A"..... 12c
Planished "B"..... 10c
Imitation A..... 9 c
Imitation B..... 8 c
Galvanized..... dis 33½ %
Russia..... 18½c
Brass.—Soft..... 30c
Hoop..... 35c
Platers'..... 50c
Tube..... 50c
Antimony..... 19
Babbit Metal—No. 1 45c, 2 25c, 3 20c, 4 16c
Bismuth..... $3 50
Nickel..... 2 50
Steel Cast..... 14c
Kibows..... dis 15 %
Sad Irons..... 3 c
Enumerated Ware.....discount from new list 50 %
Bread Pans..... ₩ ᵬ 8c

BOSTON.

Reported by Macomber, Bigelow & Dowse, 176 to 181 Oliver St.

Anvils.—"Eagle American".....per lb. 10c; dis 20 %
Augers.—Watrous Ship..... dis 10 %
L'Hommedieu Ship..... dis 20 %
Axes.—Blue Jacket..... 19 00
Racer..... 9 00
Boy's Handled Blue Jacket..... 11 00
Axe Handles.—Wadleigh's Oak—
A (Extra, $2·50. B (No. 1) $2·00. C (No. 2) $1·50 ₩ doz
Blind Hinges.—
Orr or Washburn's.....per hundred sets $8 00
Blind Fasts.—
Orr or Washburn's.....per hundred set $6 00
Bolts.—Carriage, Phila., "Girard Works"..... dis 60 %
Borax.—Best Refined..... ₩ ᵬ 14c
Borers.—Angle, Baskus'..... dis 30 %
Boring Machines.—Angle..... each $4 50
Common, Snell's quality..... each 3 50
Braces.—Barber's..... dis 40&5 %
Backus'..... dis 50 %
Spofford's..... dis 50 %
Brackets.—Star Bronzed..... new list net
Star Japanned..... new list net
Store Shelf..... new list net
Brass Faucets.—L. F. & C..... dis 25&10 %
Brushes.—Horse, Patent Metallic.....per doz. $4·50
Butts.—Union Drilled Loose Joint..... dis 45&10 %
" " Wire Fast Joint..... dis 25&10 %
" " Acorn Loose Joint... dis 45&10 %
Brass Butts..... dis 30 %
Wrought Table Butts and Back Flaps
.....revised list, dis 30 %
Wrought Narrow Butts.....reduced, dis 30 %
Cards.—
Curry Cards, No. X, per doz., $0·35..... dis 30 %
Horse " No. X, " 0·80..... dis 30 %
Wool " No. 8X, " 2·50..... dis 15 %
Cotton " No. 10, " 3·50..... dis 10 %
Cartridges.—U. S. Cartridge Co..... dis 60 %
Chisels.—"Buck Bros." Shank Goods..... add 20 %
Socket..... add 25 %
Churns.—Lightning—
Redheffer patent..... 3 4 5 6 gall
per doz $22 00 $27 00 $31 50 $36 00
Compasses and Dividers.—Bemis'..... dis 40 %
P. S. & W..... dis 30 %
Cordage.—Manilla (usual trade dis.)..... ₩ ᵬ 17c
American Tarred Hemp Lath Yarn..... ₩ ᵬ 10c
Corn Hooks.....per doz $2·75
Crow Bars.—Iron. Steel Points..... ₩ ᵬ, 5½c
"Sweet" Steel Bars..... ₩ ᵬ 11c
Brown's Steel Bars..... ₩ ᵬ 10c
K. P. & Co. Extra Drill Steel..... ₩ ᵬ 15c
Cow Ties..... dis 25
Dividers.—Cook's Nickel Plated..... dis 15 %
Door Springs.—Moseley—
Per doz.....$9·00 12·00 15·00 18·00 24·00
No..... 0 1 2 3 4
Torrey's..... $2·50
Gem..... dis 10 %
Emery.—Alden..... ₩ ᵬ 5c
Wellington Mills..... ₩ ᵬ 10c
Files.—
American..... $5 to £ currency, less 25 %
Nicholson..... new net list
Wheeler, Madden & Clemson..... $5 to £; 10 %
Stubb's Tapers, genuine, 3 in., $1·50; 3½, $1·62, 4, $1·88; 4½, $2·13; 5, $2·50
Funnel Irons..... dis. 10 %
$2·50 2·50 2·50 3·25 per doz
5, 5½, 6, 7 inch.
Deep Flange.—$3·50 3·75 4·00
5, 5½, 6 inch.
Hammers.—Maydole..... dis 12 %
M., B. & D., solid cast steel, adze eye, No. 1, $10; 1½, $7·75
" " " " " bell face, No. 1, $11; 1½, $9·75.
Hammond..... dis 12 %
Hangers & Rollers.—Novelty..... dis 30 %
Anti-Friction..... dis 40 %
Hatchets.—Underhill Edge Tool Co..... dis 20 %
C. F. Dowse, warranted Cast Steel—
Shingling.....0, $4·75; 1, $5·25; 2, $5·75
Claw.....1, 5·75; 2, 6·25
Lathing.....1, $5·50
Axe Pattern.....1, $7·00; 2, 7·50
Broad....0, $5·75; 1, $6·50; 2, $7·50; 3, $9·25; 4, $10·75
5, $12·75 6 $14·75
Hinges.—Strap and T, Stanley Works..... dis 60 %
Plate, Loose and Fast Joint..... ₩ ᵬ 6c
Wrought Screw Hook..... ₩ ᵬ 6½c
Knobs.—Young's Imp. Silverd Glass..... dis 45 %
Lanterns.—Tubular No. 0..... ₩ 9·50
Guarded, No. 74, (with kerosene oil and candle burners)..... 5·50
Lead.—Sheet, 10c.; Pipe, 9½c..... less 10 %
Locks.—Norwalk Lock Co.....reduced list, dis 35&5 %
Mattocks.—
K. P. & Co., axe finish, long cutter.....$11 50—net
Short cutter..... 11 00—net
Meat Cutters.—"Miles's" Challenge..... dis. 20 %
No. 1, $22·00; 2, $30·00; 3, $40·00.
Metal.—Babbitt.....No. 1, 35c; 3, 25c; 5, 15c ₩ ᵬ
Nails.—10d and larger..... $3 25 net
Nail Pullers.—Little Giant—Small.....per doz., $22·00
Little Giant—Large..... " 30·00
Padlocks.—Wilcox.....reduced list, dis 35&5 %
Picks.—K. P. & Co., Solid Eyes.....5 to 6 6 to 7
$9 00 $9 50
Pins.—Universal Hatand Coat all wood—
2 in.....₩ gross $2·50; 3 in., 3 50; 4 in., 4 50—dis 15 %
Plumb & Levels.—Stanley..... dis 60&10 %
Potato Diggers.
Wilmington, Cooley & Co..... dis 30 %
Pulleys.—Axle.
Frame Pol. Wheel....No. 150, 20c., 1¼ in.; 16, 38c., 2 in.
Common Axle..... No. 18, 34c., 1¼ in.; 26, 40c., 2 in.
Milled Axle.....No. 2, 42c., 1¾ in.; 2, 50c., 2 in.
Nashua Pat. Axle Bronzed Face...1¾ in., 80c; 2 in., 90c
Cast Steel Axle..... 2 in., $1·00
Pulley Blocks.—"Best Boston Make"..... net
Plated Ware.—Rogers Bros..... dis 40 %
Pocket Knives.—Conn. Cutlery Co..... new net list
American Shear Co. ..... new net list
Rail Barn Door.—For Novelty and Anti-Friction Hangers.....per foot 7c., dis 40 %
Refrigerators—Heinz Patent..... dis 30 %
Rivets.—Black..... dis 50 %
Carriage, oval head, Nos. 3, 4, 5, 6, 7, 8.. dis 35 %
13 13 14 14 15 16c ₩ ᵬ
Sad Irons.—Bliss & Drake..... ₩ ᵬ 3½c
Sand Paper..... dis 15 & 5 %
M. B. & D.....0 to 2, $4·25; 2 to 3, $4·75
Saws.—*Hand and Panel*—
Wheeler, Madden & Clemson's, same list as "Disston's"..... dis. 15&5 %
Wheeler, Madden & Clemson X Cut.....per ft., 35c
" " " Champion X Cut. " 50c
Boynton's genuine Lightning X Cut.....per ft., 50c
Screws.—Am. Screw Co., new list Sept. 1st...dis 52½ %
Aiken's..... dis 52½ %
Scythe Stones.—
"Willoughby Lake," first quality.....₩ gross $4·50
second quality..... " 3·00
Shovels.—O. Ames..... dis 25 %
M. B. & D..... dis 25 %
Sifters.—Coal, Illes, &c..... $12 00
Spading Forks.—W. C. & Co..... dis 30 %
Stone Pickers.—"Partridge," original...₩ doz $15 00
Tools.—Aiken's Pattern, 20 in set; Parr's, $6 50 per doz
Traps.—Oneida..... dis 25 %
Blake's..... dis 40 %
Vises.—K. P. & Co.'s Solid Box. Blacksmith.....₩ ᵬ 15c
Parker's Parallel..... dis 10 %
Backus..... dis 25 %
"Howards" Parallel..... dis 20 %
Wardrobe Hooks.—Wire to drive.....₩ gross $1 00
Weather Strips.—"Harmon's".....per doz 35, dis 10 %
Weights.—Window Weights..... ₩ ᵬ 1½
Wedges—Axe..... ₩ doz 35c
Wire.—
Eureka, in spools, No. 26 to 40 assorted...₩ gross $3 50
Wire Netting.—Clinton Wire Cloth Co., Green, Drab or Black..... ₩ ft 5c
Walton..... dis 5c
Wrenches.—Genuine Wrenches, G. A. Coes..dis 40& 10 %
Wringers.—
Novelty and Universal, Tub No. 2 } .....Less than doz, $72 00
.....2 doz or more, 70 00
Bench A... less than 2 doz $90 00; 2 doz or more $88 00
B... " " 98 00 " " 96 00
C.... " " 114 00 " " 111 00
Eureka..... " " 60 00 " 98 00
Withington, Cooley & Co.—
Hoes, Rakes, Forks, &c..... dis 30

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Apple Parers.—Conqueror..... ₩ doz $ 75
Hudson's Rotary..... " 7 50
Axes.—Wm. Mann's, Red Warrior..... ₩ doz 12 00
" "C. Marshall"..... " 9 25
" Handled..... " $5 extra
" Double Bitted..... 19 00
H. L. B. & Co.'s, L. & Co..... 9 75
" Pioneer..... 9 25
" James & Co..... 8
Hunt's..... " 12 00
Axles.—"Jones, Henry & Co.'s" Patent Lubricating, Half Patent Swelled Taper, Plain Taper and Concord Axles..... dis 25 &
Common Axles (Pat. Lubricating), 1¼ inch and upward..... ₩ lb.
do. less than 1¼ inch..... " 6½c.
Bellows.—Best St. Louis make..... 5c ₩ in. net
Bells.—Troy, Church, School and Farm Bells..₩ 2 40c
"Improved Amalgam Bronzed," 15 in., $2·00; 17 in., $2·50; 19 in., $4; 21 in., $5; 24 in., $14; 27 in. $19·50
Belting.—"Boston Belting Co.'s" Rubber....dis 40&5 %
Bradford & Sharp's" Oak-Tanned Leather.... dis 35 %
Bonts—Metallic, Sectional, Bond's Pat....new list net
Bolts.—Arms, Bell & Co.'s Carriage & Tire..dis 50&10 %
Arms, Bell & Co.'s Machine..... dis 40&10 %
Butts.—Western Butt Co.'s new list—
Narrow Fast Joint..... dis 2&10 %
Broad Fast Joint..... dis 3 &10 %
" Loose " ..... dis 45&10 %
Reversible..... dis 40&10 %
" Japanned and Silver Tipped..... dis 45&10 %
Loose Joint "Acorn" " " ..... dis 45&10 %
Churns.—Julian, No. 2, $7·00; No. 3, $7·50; No. 4, $8·50..... dis 20 %
Cider Mills.
American Senior, $22·00; Am. Junior, $18·50..... net
Corn Drill.—Campbell's Patent..... each $
Corn Knives.—Dunn Edge Tool Co.'s Clip...₩ doz 5 00
Seymour Mfg. Co.'s Solid Steel Back..... " 00
Corn Shellers.—Sandwich Mfg. Co.'s—
Power Shellers..... dis 10 %
Hand Shellers..... Special rates
Cotton Gins.—
Carver, with 10 in. Saws, $3·15 a Saw..... net
12 in. Saws, $4·00 a Saw..... net
Crow Bars.—Steel Pointed..... ₩ ᵬ 6½c
Drag Saw Machines.—
Culver's Pon Drag Saw..... dis 10 %
Robinson's Patent Sweepstakes Drag Saw.... dis 10 %
Fanning Mills.—Nash & Cutt's..... dis 20 %
Feed Cutters.—Improved Burdick Nationel...dis 20 %
Sanford No. 1, $10 00; No. 2, $8 00..... net
Files.—Black Diamond, Mill.....$5·00 £ currency, net
" Bastard..... 5·00 £ currency.
" Taper..... 5·00 £ currency.
Forges.—Keystone Portable Forge Co.'s..... dis 12½ %
Forks and Hoes.—
Auburn Mfg. Co.'s Hay and Manure Forks.... dis 30 %
" " Handled Hoes..... dis 30 %
Garden Seed Drills and Wheel Hoes.
Allen's Double Wheel Hoe..... dis 15 %
" Planet Drill, Nos. 2 and 3..... dis 15 %
" Combined Drill and Wheel Hoe..... dis 15 %
Grinding Mills.—Challenge Feed Mills ....dis 15 %
Sedgebeer's Nonpareh Mills..... dis 15 %
Bradford's French Burr Mills..... net list
Hammers.—Masons' Hammers..... ₩ ᵬ 30c
Smiths' Hand..... 20
Handles.—No. 1 Fork, Hoe and Rake..... dis 50 %
No. 2 Fork, Hoe and Rake..... dis 50 %
Harrow Teeth.—1 inch iron..... ₩ ᵬ 4½c
⅞ and ¾ inch iron..... 4½
Barbed or Headed..... ½c extra
Hay and Cotton Presses.—
Dederick's Railroad..... net list
" Perpetual..... net list
Hay Knives.—
Dunn Edge Tool Co.'s..... ₩ doz $12 00 net
Lightning (Weymouth's Patent)..... ₩ doz $8 50
Horse Hay Fork.—Nellis' Harpoon...$8·50 each net
Horse Nails.—National Patent Pointed..... 40c rate
National Patent Pointed, extra finished..... 25c "
Horse Powers.—Pitts or Carey's Patent..... dis 10 %
Wheeler's Railway..... dis 10 %
Sandwich Lever..... dis 10 %
Horse Shoes.—
Rhode Island (Perkin's Pattern)..... ₩ keg, $5
" Mule..... " 8
" Trotting Shoes 8
Tredegar Horse..... per keg 4
" Mule..... per keg 5
Hose.—
Boston Belting Co.'s Rubber Medium Sizes, dis30&10 %
" " " Small Sizes, Hydrant..... dis 40 %
Mattocks and Grub Hoes.—
Kiem, Logan & Co.'s Mattocks...₩ doz $11 75 @ 13 50
" " Grub Hoes,
oval eye " 8 25 @ 9 75
Money Drawers.—
Pierpont & Co.'s Excelsior..... per doz $33·00 net
Nails.—Wheeling Riverside Brand..... $3·00 rates
Packing.—Boston Belting Co.'s Rubber, Plain...dis 30 %
Boston Belting Co.'s Rubber, Pure..... dis 25&5 %
" " No. 2 Plain..... dis 40 %
" " Round and Square....dis 10&10 %
Picks.—
Railroad and Clay..... ₩ doz $8 50 @ 10
Coal..... " 7 45 @ 8
Pob..... " 11 50 @ 13
Stone..... " 14 00 @ 14
Tamping..... " 14 75 @ 15
Miners Drifting..... " 75 @ 11
Plows.—Avery's Cast and Steel..... dis 20 %
Collins Cast Cast Steel..... new list net
Pekin Steel..... dis 25 %
Plow Sulky.—Buckeye..... $30·00
Post Hole Augers.—Clark's Patent—
No. 1, ₩ doz. $27; No. 2, $30; No. 3, $32..... dis 30 %
Pulleys.—5 inch..... per doz $3·70 net
4 inch..... per doz 2·50 net
Nellis' Patent..... dis 30 %
Pumps.
St. Louis Farm, Patent Metal Lined...new list dis 25 %
Rakes.—Paddock's Premium Sulky..... each $27 50
St. Louis Revolving 14 tooth..... 4 50 net
" 16 " ..... 5 00 net
" Hand Hay Rake..... per doz $2·50
Reaper Knives and Sections.—
Geo. Barnes & Co.'s Knives..... dis 40 %
" " Sections..... dis 40 %
Road Scrapers.—Steel..... each $4·50 net
Cast Iron..... dis 10&5 %
Saws.—Curtis & Co..... dis 15 %
Scythes.—Dunn Edge Tool Co.'s..... dis 30 %
Scythe Stones.—No. 1 Ind'n Pond ₩ gr's, $7 00
Extra Indian Pond..... " 7 50 } dis 25 %
Premium..... " 10 50
Diamond Grit..... " 13 00
Shovels and Spades.—H. M. Myers & Co.... dis 30
Grain Scoops—Patent Cor'd Straps H. M. M. & Co ..... dis 30 , and 75c per doz extra
do. M. Rowland & Co., dis 30 & and 75c " "
do. O. Ames & Son, dis 17½ % and 75c " "
Sledges.—Smith's Stone or Coal Sledges—
Steel Face Pol'd Steel..... ₩ ᵬ 17c
Solid Cast Steel..... " 8c
Spaths and Cradles.—Seymour Mfg. Co.'s ..dis 30 %
Sorghum Machinery.—Bell Cane Mills.... dis 30 %
Scantlin's Seamless Evaporators..... dis 30 %
Springs.—Cleveland Spring Co.'s—
Carriage and Express..... dis 12½ %
Blue Seat Springs..... dis 15 %
Thimble Skeins.—Whitewater's ..... dis 40&10 %
Vises.—Bond Box ..... ₩ ᵬ 10c
Wilson Mfg. Co.'s..... dis 15 %
Wheelbarrows.—Champion Iron Wheels..... doz $24·00
Champion Wood Wheel..... ₩ doz $2·00
" Garden..... ₩ doz. $9·00
Wrenches.—Coes' Genuine..... dis 30 %
Coes' Pattern..... dis 30 %
Wagons.—Whitewater Farm Wagons—
Thimble Skein.....3 in. $14; 3½ in. $15 3¾ in $16
Iron Axle.....1⅛ in. $95; 1⅜ in. $81; 1⅝ in. $88

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.)

Tin Plate.
IC, 10x14, Best Char..$ 9·00 | IX, 14x20, Roofing....$11·00
IX, 10x14, " .. 11·50 | IC, 20x28, " .... 16·00
IC, 12x12, " .. 9·50 | IX, 20x28, " .... 22·50
IX, 12x12, " .. 12·00 | IC, 10x14, Coke..... 8·00
IC, 14x20, " .. 10·00 | IC, 14x20, " .... 9·50
IX, 14x20, " .. 12·00 | IC, 10x20, " .... 12·50
IC, 14x20, Roofing.... 8·50
Usual difference for odd sizes.
Block Tin.
Strait's, Large Pigs.....24c | do. Small..... .25c
Eng. Ref'd, Large Pig...24c | Bar..... 26c
Sheet Zinc.
Casks..... ₩ ᵬ 10c | Sheet..... ₩ ᵬ 10½c
Solder.
Extra in Bars..... 17c
No. 1, in bars..... 16c
No. 4, " 15c
Roofing..... 14c
Sheet Copper.
Brazier's, 30x60, 14 to 100 lbs. Sheets..... 32c
" " 10 and 12 lbs., ... 34c
" " 6, 7, 8 and 9 lb. Sheets..... 36c
Tinned, 14x48, 14 and 16 oz..... 32c
Planished, 14x48, 14 and 16 oz..... 39c
" Boiler Sizes, 14 and 16 oz..... 41c
Copper Bottoms..... 34
Sheet Iron.

	Com'n.	Sm'th.	Char'l.	Tin'ns
No. 16 to 20	4 c	4½c	6½c	7½c
No. 22 to 24	4 c	4½c	6½c	7½c
No. 25 & 26	4½c	5 c	6½c	8 c
No. 27	4½c	5½c	6½c	8½c

Galvanized Sheet Iron..... dis 30 %
Iron Rivets..... dis 25 %
Iron Wire..... dis 40 %
Copper Rivets and Burs..... dis 30 %
Genuine Russia Iron.
Perfect—No. 9, 10, 11, 12..... per lb 16c
Stained—No. 9, 10, 11, 12..... per lb. 15c
Tare 22 lbs to Bdle. For less than 1 Bdle. add 1c. ₩ ᵬ

THE JUDSON GOVERNOR.

It is a common method to advertise Governors *without cost*, unless satisfactory to the customer, and then charge *High Prices* for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying other Governors should stipulate that their durability be guaranteed, and should also take care that they do not, for much inferior Governors, pay higher prices than those shown in the accompanying list. We guarantee the Judson Governor will do all any other Governor can do, and in Accuracy and Durability—the main essentials—we guarantee it shall do more.

Reduced Price List,

JANUARY 25th, 1876.

☞ For dimensions of Governor, see Illustrated Price List.

THE JUDSON PATENT

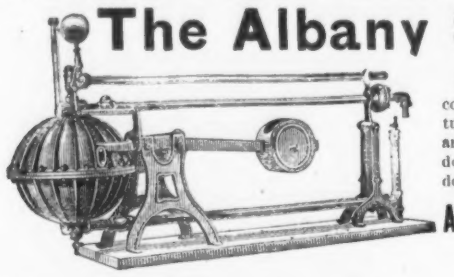
Improved Steam Governor.

Size, Inch.	Plain.	Bright Finished.	Extra for Lever.	Stop Valve.
¼	$17·00	$19·00	$1·90	..
¾	19·00	21·00	1·90	..
1	21·00	24·00	2·00	$5·00
1¼	25·00	28·00	2·25	6·00
1½	29·00	33·00	2·50	8·00
2	35·00	40·00	2·75	10·80
2¼	42·00	48·00	3·25	14·00
2½	45·00	51·00	3·50	15·00
2¾	49·00	56·00	3·75	17·00
3	55·00	63·00	4·25	20·00
3½	64·00	73·00	4·50	25·00
4	74·00	84·00	5·00	30·00
4½	86·00	97·00	5·50	36·00
5	94·00	106·00	6·00	42·00
5½	112·00	125·00	6·50	48·00
6	125·00	138·00	7·00	54·00
7	150·00	165·00	8·00	68·00
8	185·00	202·00	9·00	80·00
9	205·00	225·00	10·00	..

No Charge for Boxing & Cartage.

JUNIUS JUDSON & SON, Rochester, N. Y.

The Albany Steam Trap.



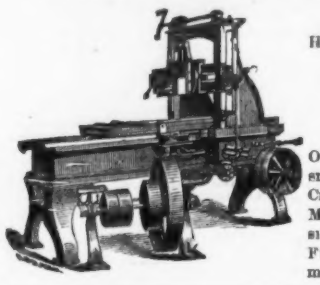
This Trap automatically drains the water of condensation from *Heating Coils*, and returns the same to the Boiler *whether* the Coils are *above or below* the water level in Boiler, thus doing away with pumps and other mechanical devices for such purposes. Apply to

Albany Steam Trap Company,
Albany, N. Y.

The Pratt & Whitney Co.,

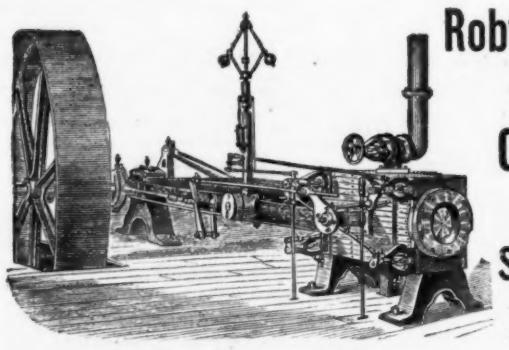
Hartford, Conn.,

Have constantly on hand and making



Drop Hammers

Of recently Improved Construction. Pony Trip Hammers, Blacksmiths' Sheaves, Broaching and Stamping Presses, Iron Shop Cranes, Machinists' Tools, Gun and Sewing Machine Machinery. Make to order Gray and Charcoal Iron Castings of all styles and sizes not exceeding 15 tons weight, (making patterns if desired). Furnish Clamp Pulleys of light patterns, cut gears in a superior manner, &c., &c.



Robt. Wetherill & Co

CHESTER, PA.

Corliss Engine BUILDERS.

Shafting & Gearing,

Boiler Makers.

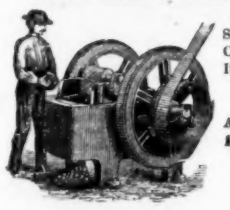
THORNE, DeHAVEN & CO., Drilling Machines,

21st Street, above Market, Philadelphia.

PORTABLE DRILLS. Driven by power in any direction.
RADIAL DRILLS. Self-feed—Large Adjustable Box Table.
VERTICAL DRILLS. Self-feeding.
MULTIPLE DRILLS. 2 to 20 Spindles.
HORIZONTAL BORING AND DRILLING MACHINES.
HAND DRILLS. CAR BOX DRILLS.
SPECIAL DRILLS. For Special Work.

BLAKE'S PATENT
STONE & ORE BREAKER.

New Pattern with Important Improvements & Abundant Strength



For reducing to fragments all kinds of hard and brittle substances, such as STONE for making the most perfect McADAM ROADS, and for making the best CONCRETE. It breaks stone at trifling cost for BALLASTING RAILROADS It is extensively in use in MINING operations, for crushing

IRON, COPPER, ZINC, SILVER, GOLD, and other ORES.

Also for crushing **Quartz, Flint, Emery, Corundum, Feldspar, Coal, Barytes, Manganese, Phosphate Rock, Plaster, Soapstone, &c.**

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BLAKE CRUSHER CO., New Haven, Conn.

JOHN S. HUNTER, President. EDWARD J. MURPHY, Sec. & Treas.

The Hartford Foundry & Machine Co.,

Successors to the WOODRUFF & BEACH IRON WORKS,

MANUFACTURERS OF

Marine & Stationary Engines, Mill Gearing Hoisting and Mining Machinery.

PUMPING ENGINES, for City and Town Supply a Specialty.

60 to 96 Commerce Street, HARTFORD, CONN.

RICHARD DUDGEON,

No. 24 Columbia Street, New York,

MAKER AND PATENTEE OF

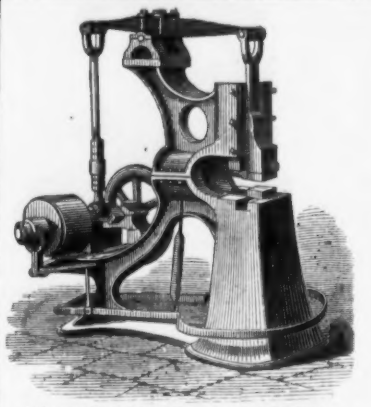
Hydraulic Jacks and Punches,

ROLLER TUBE EXPANDERS

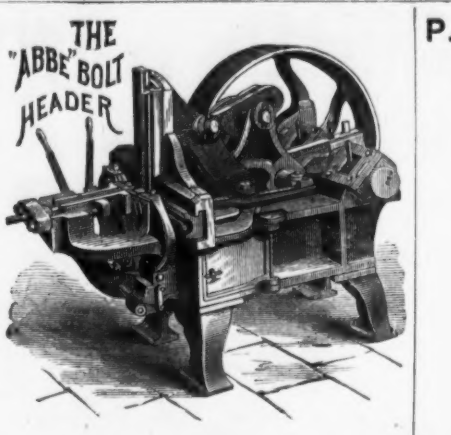
And Direct-Acting Steam Hammers.

Communications by letter will receive prompt attention.

JACKS for Pressing on Car Wheels or CRANK PINS made to order



THE PALMER POWER SPRING HAMMER.



Of these Machines we are building sizes to meet the requirements of all Manufacturers and Workers of Iron and Steel. In simplicity, durability, ease of operation, accuracy, and range of work, we guarantee them superior to any Machines of their kind produced in the world. For prices, references, and full descriptive circulars, address

S. C. FORSAITH & CO.,

Manchester, N. H.

Knowles Patent Steam Pumps

MANUFACTURED BY THE

KNOWLES STEAM PUMP WORKS,

WARREN, MASS.

WAREHOUSES:

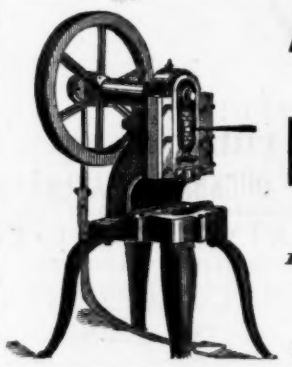
14 & 16 Federal Street, Boston, 92 & 94 Liberty Street, N. Y.

Cut above represents regular Boiler Feed Pump, No. 3 and 4. Showing New Patent Valve Motion, and Hand Power LEVER Attached and Detached.

FIRE PUMPS a specialty.

Mining Pumps (both Double Acting Plunger, and Piston Pattern,) which we guarantee to run absolutely noiseless on any lift from 100 to 600 ft., at a single lift, a specialty. Pumps for every possible duty. Prices as low as any, and our workmanship and material altogether the Best.

Every machine furnished under a complete guarantee.



A. H. MERRIMAN,

Patent Power

Punching Presses.

Patentee and Sole Manufacturer.

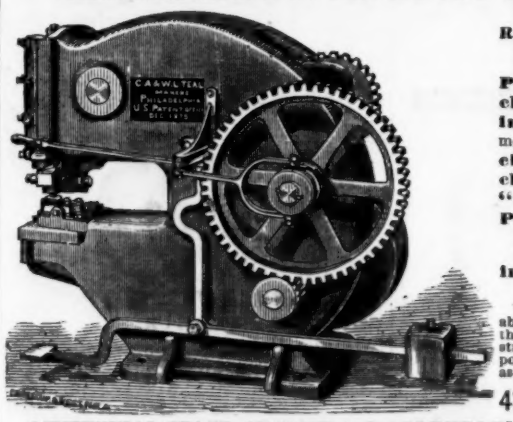
I warrant every part of this Machine to stand the shock of the wheel running at 125 revolutions.

West Meriden, Conn.

Machinery Hall, Philadelphia, Section B 4, Columns 28 and 29.

C. A. & W. L. TEAL,

Manufacturers of IMPROVED BENDING ROLLS



Arranged for **Removing Work from the end of top roll.**

COMBINED

Punching and Shearing Machines, Single Power Punching Machines with Shearing Attachments, **Rotary Shearing Machines, Steam Riveting Machines. "Atherton's" Patent "Cam," Steam Engines, Hair Picking Machines and**

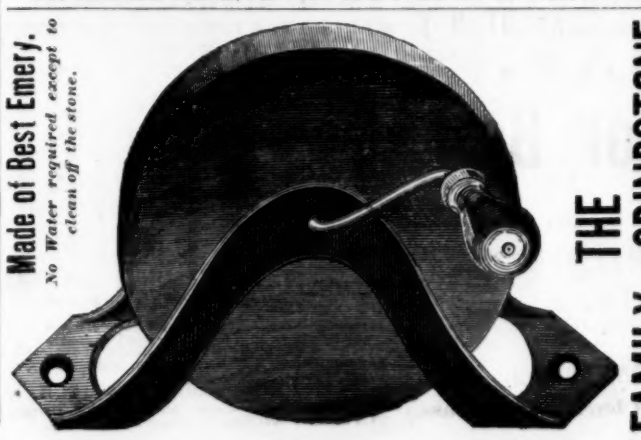
MACHINERY

in general.

We would call special attention to the above engine, as it has the same leverage on the driving shaft at every point of the stroke that the "crank" has at its strongest point, making a smoother running as well as a more powerful engine.

4116 Ludlow St., Philadelphia.

CENTENNIAL SPACE, SECTION C. 3. COLUMNS 25 & 26. MACHINERY HALL.



Made of Best Emery.
No Water required except to clean off the stone.

THE FAMILY GRINDSTONE MFG. CO.,

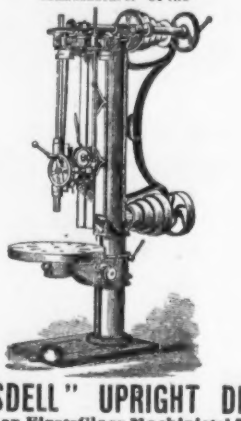
296 MARKET ST., NEWARK, N. J.

$3·00 Per Doz.

P. BLAISDELL & CO.,

WORCESTER, MASS,

Manufacturer of the



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And other First-Class Machinists' Tools.

AMERICAN NATURAL OIL CO.

DEALERS IN ALL KINDS OF

Lubricating Oils.

West Virginia Lubricating Native Rock Oil!

Used by most of the Railroads in the United States, Canada and Europe, and by Mechanics on all kinds of Machinery. The Safest, Cheapest and Most Reliable Lubricator in the world. Obtained the Highest Prize at the Paris Exposition. 28, 29, 30 and 31 Gravity.

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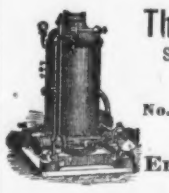

The Whitmore Engine.

SAFEST, CHEAPEST & BEST.

Lovegrove & Co.,

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PHILADELPHIA, PA.

Sole Manufacturers

Engines, Boilers and Steam Pumps.

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BEST PIERCING SAWS

For Scroll Sawing.

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TOOLS, FILES, STEEL WIRE AND SUPPLIES.

Agents for the

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Lathes, Shapers, Slotters, Planers, Gear Cutters, Drill and Power Presses, Pulleys, Hangers and Shaftings, Machinery and Machinists' Tools in general.

57, 59 & 61 Passaic Avenue, Kearney (East Newark), N. J.

The Brown Cotton Gin Co.

NEW LONDON, CONN.

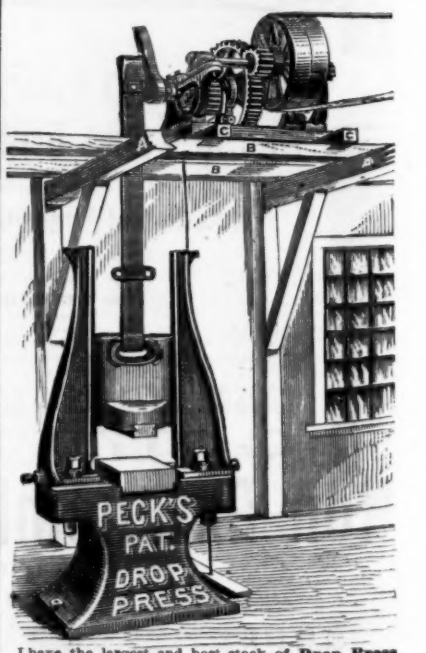
Manufacturers of

COTTON GINS,

With or without

Self-Feeding Attachment & Condenser.

Cotton Gin Saws, Ribs and other Gin materials. Also **Albertson's Segment Screw Cotton,** and Hay Press. Send for Circular.



I have the largest and best stock of **Drop Press Patterns** in the country—suitable for Forging, and all kinds of Sheet Metal work.

WHY THE BEST:

It requires less power, works faster, gives a harder blow with same weight of hammer, the rebound of the hammer is caught without lessening the force of the blow, the blow is uniform and not affected by variations in the speed of the driver. It is always in order. **The Drop Press a specialty.**

MILO PECK, New Haven Conn.

Machinery, &c.

THE

Shapley Engine

Patented Feb. 10, 1874.

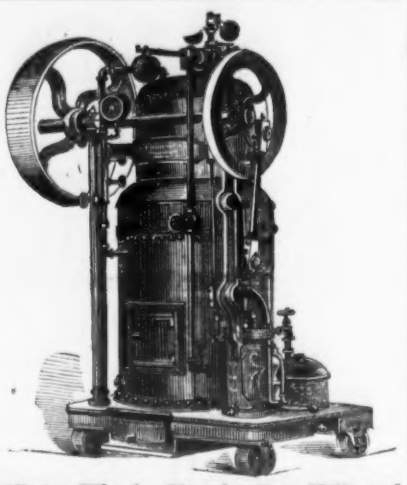
COMPACT,
PRACTICAL,
DURABLE,
ECONOMICAL.

$200·00.

Cheaper than any Engine offered of the same capacity.

MANUFACTURED BY

SHAPLEY & WELLS,
Binghamton Iron Works,
Binghamton, N. Y.



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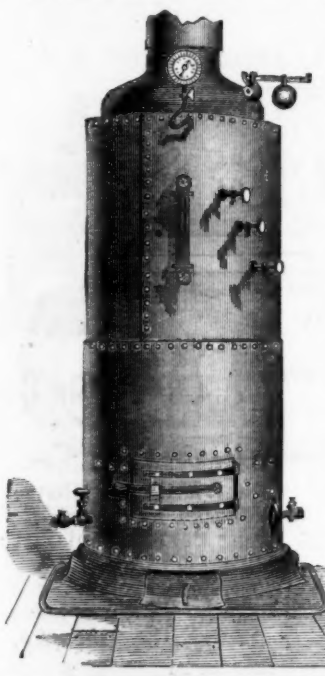

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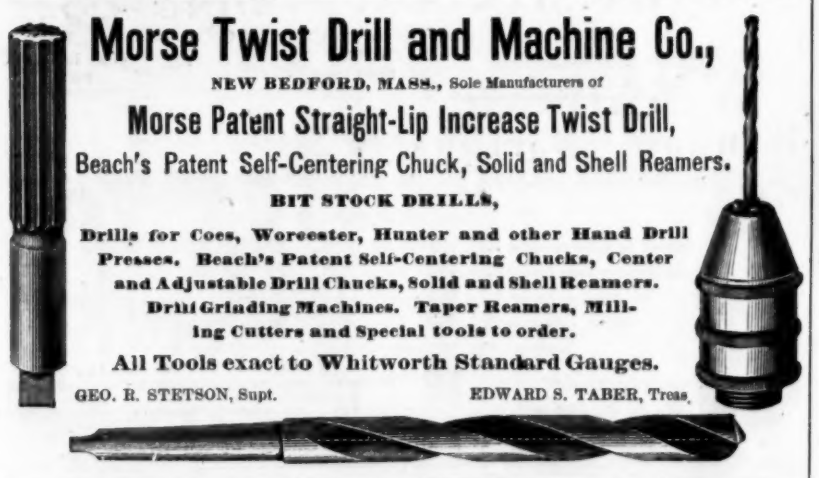

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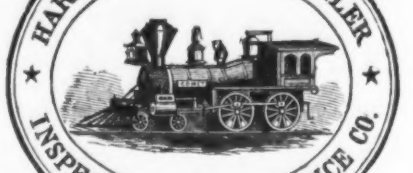

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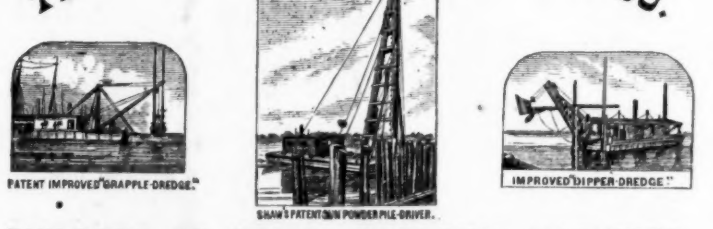

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Anti-friction and noiseless; maximum blast and minimum power; all sizes for

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ALL WORKING PARTS WELL FINISHED.

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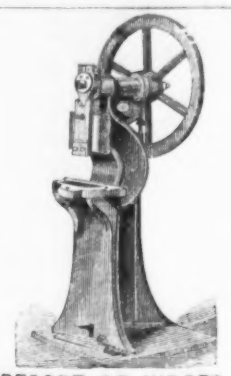

REPORT OF JUDGES

In Department V, Group 3, at the 44th Exhibition of the

AMERICAN INSTITUTE,

Held in the City of New York, Oct., 1875

No. 318, Drawing, Drop & Punching Presses.

THE STILES & PARKER PRESS CO.,
Of Middletown, Conn.

The machinery exhibited by these makers is of a character that calls for special commendation. In addition to their well known punching presses, to which a new feature has been added in a press adjustable to an inclination for discharging work left above the die, there are exhibited by them a combined punch and shears, a drawing or blanking press, and a drop.

In all these there is shown the highest mechanical culture, applied to meet every practical requirement, to avoid every practical difficulty, and to enlarge the range of application of the machines, by devices which are at once simple, elegant, and effective.

Your committee would unhesitatingly recommend for this exhibition the "Medal of Progress," but find such award debarred by the rule of the Institute, forbidding such award unless a Silver Medal has been previously awarded. We, therefore, respectfully recommend the award of a Silver Medal.

Silver Medal Awarded.
A true copy from the Report on file.
JOHN W. CHAMBERS, Sec'y.

AQUOMETER Steam Pump.

Highest Premium awarded by Franklin Institute, 1874,

For Simplicity, Economy of Construction & Efficiency.

An absolutely Durable, Cheap, Efficient and Economical Steam Pump. Requires no special care or lubricating. Warranted. Address for circular,

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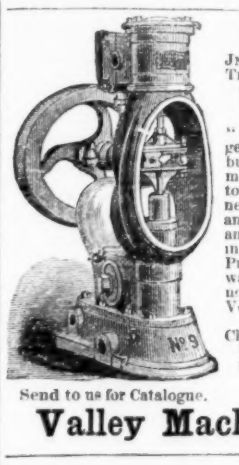

WASHINGTON, D. C., Sept. 13, 1876.

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DEAR SIR: The "Wright Bucket Plunger Steam Pump" you built for the Government "works like a top." Am sure it has never had its equal in any of the departments, and I have no hesitancy in recommending this Pump to any one in want of a first-class, noiseless Steam Pump. Very respectfully,

J. THOS. MILLER,
Chief Engineer U. S. House of Representatives.

Send to us for Catalogue.

Valley Machine Co.

EUREKA SAFETY POWER!

Practically **impossible to explode.** Tested to 300 lbs pressure per square inch. Will split 2 inch seasoned oak—grinds bushels Corn per hour. **Price $250.** Also, Stationary Engines and Boilers and **Spark Arresting Portable Engines** for plantation use. Send for our circular. Discount to the trade.

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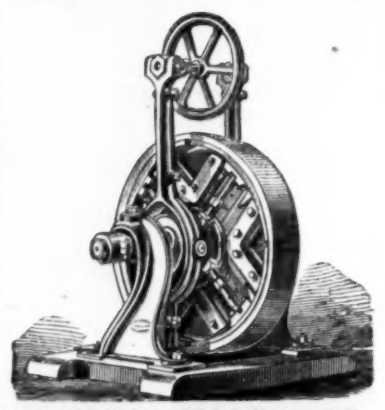

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Friction Clutches

For Connecting Shafting and Gearing.

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AXX Genuine	40c	C	20c
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A	30c	F	11c
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"Note."—The above are my standard mixtures, and have given satisfaction wherever used, but I am prepared to make Anti-Friction Metal of any quality or mixture desired by the purchaser.

BRASS CASTINGS, 21 to 35c. | **INGOT BRASS,** 19 to 28c. | **BRASS TURNINGS AND OLD METALS WANTED.**

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It is made from one piece of Metal, both blade and handle; therefore is as cheap as the cheapest.
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P. S.—We have noticed a circular issued by the *East River Sheet Metal Mfg. Co.*, informing the Trade that there are parties manufacturing a Fire Shovel made in one piece and corrugated at or near the junction of handle and blade," upon which they hold a patent. We do not know to whom they refer, but if to us we wish to say that we manufacture our Shovel under Letters Patent of the U. S. granted to us and we *guarantee* all parties purchasing goods from us against all loss or damage by *infringements* of every kind and nature.

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Manufacturers of **STAMPED WARE, CAN TRIMMINGS, COAL HODS, Etc.**

Send for Price List.

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Is now **Universally Used in the United States,** And kept in stock by all first-class jobbers in hardware, tinware and stoves.

The immense demand for this very popular article has induced certain manufacturers to *infringe* our Patents. We therefore notify the trade that we will **prosecute all infringers,** whether manufacturers or dealers.

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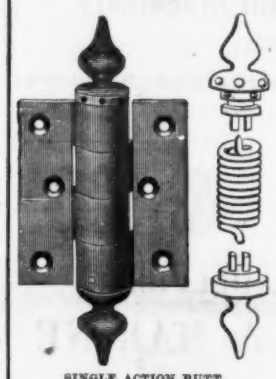

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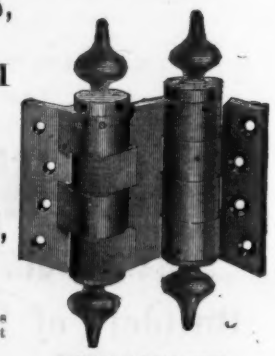

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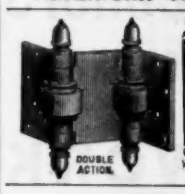

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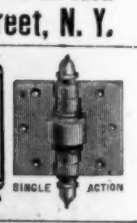

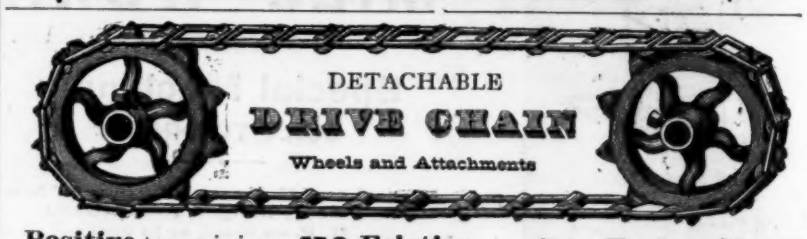

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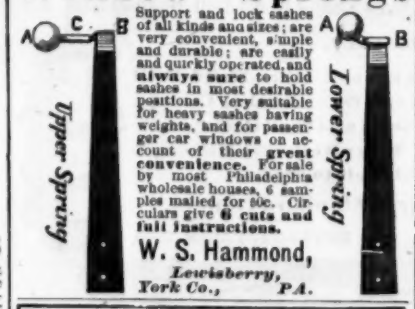

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